

## 2015 IRC Significant Changes

Based on the International Residential Code® (IRC®)

## Objectives

- Upon completion, participants will be better able to:
  - Identify the most significant differences between the 2012 IRC and the 2015 IRC.
  - Explain the differences between the current and previous edition.
  - Identify key changes in organization and code requirements.
  - Identify the applicability of design, plan review and inspection requirements.

## Description

- This seminar reviews and analyzes selected significant changes from the 2012 IRC to the 2015 IRC.
- It assists code users in identifying the specific code changes that have occurred, and more importantly, understanding the reason behind the change.
- It focuses on those code changes selected due to their frequency of application, special significance or change in application.

## Welcome

- Rules for the course,
- Breaks,
- Restroom location.
- Introduction of instructor and participants.
- Other

## Part 1 Administration

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### R101.2, R202 Scope—Accessory Structures

#### Change Type: Modification

- The maximum height for accessory structures has been increased from two to three stories above grade plane. Technical requirements have been removed from the definition, and accessory structures are now permitted to be unlimited in area.

#### Accessory Structure.

- A structure that is accessory to and incidental to that of dwelling(s) and which that is located on the same lot.



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## Chapter 1

## Scope and Administration

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### R104.11 Alternative Materials, Design, and Methods of Construction and Equipment

#### Change Type: Addition

- When proposed alternatives are not approved, the reason for the disapproval must be stated in writing by the building official.



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## R105.3.1.1 Existing Buildings in Flood Hazard Areas

### Change Type: Modification

- Determination of substantial improvement for existing buildings in flood hazard areas is the responsibility of the building official. The related provisions are now consolidated in Section R105.3.1.1.



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## Part 2 Chapter 3

# Building Planning

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## R106.1.4 Information for Construction in Flood Hazard Areas

### Change Type: Modification

- Construction documents for dwellings in Coastal A Zones shall include the elevation of the bottom of the lowest horizontal structural member.



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## Table R301.2(1) Climatic and Geographic Design Criteria

### Change Type: Modification

**TABLE R301.2(1)** Climatic and Geographic Design Criteria

Ground Snow Load	Wind Design			Seismic Design Category <sup>f</sup>
	Speed <sup>d</sup> (Mph)	Topographic effects <sup>k</sup>	Special wind region <sup>l</sup>	Wind borne debris zone <sup>m</sup>

(Portions of table and footnotes not shown remain unchanged)

- l. In accordance with Figure R301.2(4)A, where there is local historical data documenting unusual wind conditions, the jurisdiction shall fill in this part of the table with "YES" and identify any specific requirements. Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- m. In accordance with Section R301.2.1.2.1, the jurisdiction shall indicate the wind-borne debris wind zone(s). Otherwise, the jurisdiction shall indicate "NO" in this part of the table.



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# R301.2 Wind Design Criteria

## Change Type: Modification

- Ultimate design wind speed values replace basic wind speed values for 3-sec gust wind speeds in Section R301.2.1. A wind speed conversion table has been added for conversion from ultimate design to nominal design wind speeds.

TABLE R301.2.1.3 Wind Speed Conversions<sup>a</sup>

$V_{ult}$	110	115	120	130	140	150	160	170	180	190	200
$V_{nom}$	85	89	93	101	108	116	124	132	139	147	155

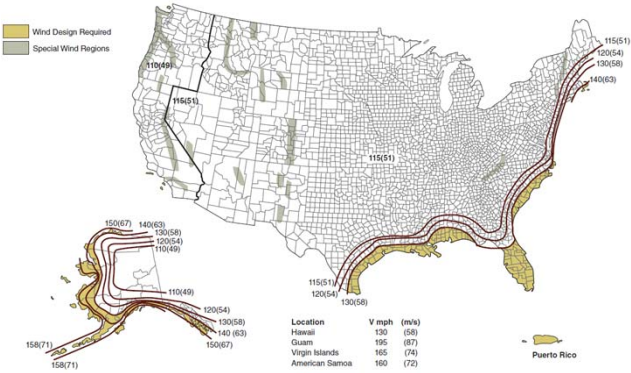
For SI: 1 mile per hour = 0.447 m/s.

a. Linear interpolation is permitted



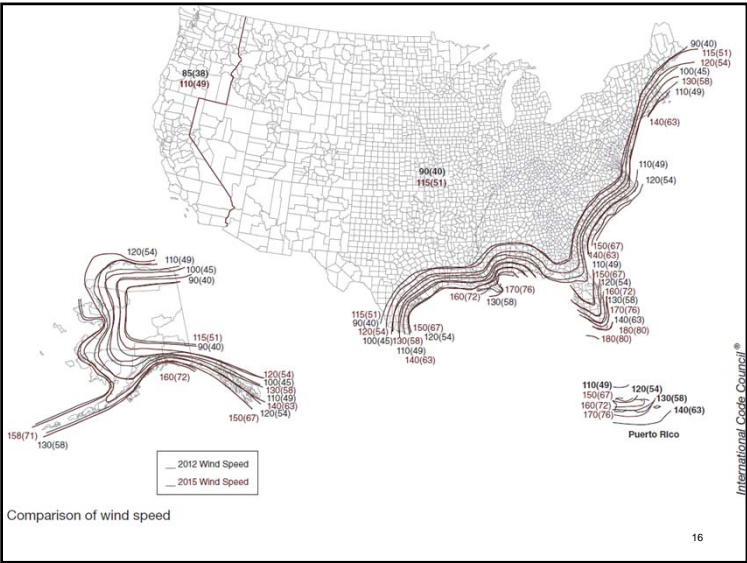
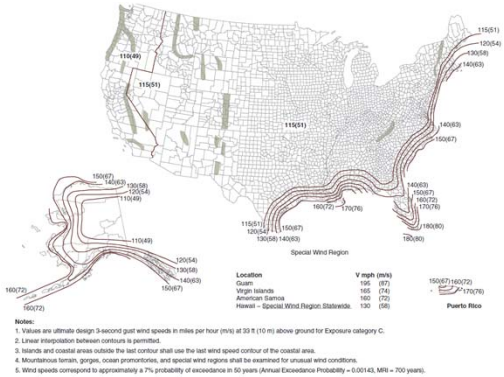
# R301.2 Wind Speed Maps

## Change Type: Modification



# R301.2 Wind Speed Maps

## Change Type: Modification



Comparison of wind speed



## Table R301.2(2) Component and Cladding Loads

### Change type: Modification

**TABLE R301.2(2)** Component and Cladding Loads for a Building with a Mean Roof Height of 30 Feet Located in Exposure B (ASD)(psf)<sup>a, b, c, d, e</sup>

Zone	Effective Wind Area (feet <sup>2</sup> )	Ultimate Design Wind Speed, $V_{ULT}$ (mph)								
		110	115	120	130	140	150	160	170	180
Roof 0 to 7 degrees										
Roof >7 to 27 degrees										
Roof >27 to 45 degrees										
Wall										



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## R301.2.1.1.1 Sunrooms

### Change Type: Addition

- The 2015 IRC requires sunrooms to comply with AAMA/NPEA/NSA 2100-12. The standard contains requirements for habitable and nonhabitable sunrooms.



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## Table R301.2(2) Component and Cladding Loads

**TABLE 3.1** Comparison of Roof Angle Categories

2015 IRC	2000–2012 IRC
• 0 to 7 degrees	• 0 to 10 degrees
• Greater than 7 to 27 degrees	• Greater than 10 to 30 degrees
• Greater than 27 to 45 degrees	• Greater than 30 to 45 degrees



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## R301.2.1.1.1 Sunrooms

**Category I:** A thermally isolated sunroom

- Walls open or enclosed
- Insect screening or 20 mil maximum thickness plastic film
- Nonhabitable and unconditioned.



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## R301.2.1.1.1 Sunrooms

**Category II:** A thermally isolated sunroom with enclosed walls.

- Openings are enclosed with translucent or transparent plastic or glass
- Nonhabitable and unconditioned



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## R301.2.1.1.1 Sunrooms

**Category IV:**

A thermally isolated sunroom with enclosed walls.

- Heated or cooled by a separate temperature control or system
- Thermally isolated
- Fenestration complies with:
  - Water penetration resistance
  - Air infiltration resistance
  - Thermal performance.
- Nonhabitable and conditioned



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## R301.2.1.1.1 Sunrooms

**Category III:** A thermally isolated sunroom with enclosed walls.

- Openings are enclosed with translucent or transparent plastic or glass
- Fenestration complies with:
  - Water-penetration resistance
  - Air infiltration resistance
- Nonhabitable and unconditioned



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## R301.2.1.1.1 Sunrooms

**Category V:** A sunroom with enclosed walls.

- Designed to be heated or cooled
- Open to the main structure
- Fenestration complies with:
  - Water-penetration resistance
  - Air infiltration resistance
  - Thermal performance.
- Habitable and conditioned



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### R301.2.1.2 Protection of Openings in Wind Borne Debris Regions

#### Change Type: Modification

- Requirements for glazed openings to be protected from wind borne debris have been clarified by the addition of a new section detailing changes to the ASTM E 1996 standard.



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### R301.2.1.4 Wind Exposure Category

#### Change Type: Modification

- In the 2012 IRC, Wind Exposure Category D applied to regions adjacent to open water in non-hurricane-prone regions.
- Wind Exposure Category D now applies to open water, mud and salt flats, and unbroken ice fields.



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### R301.2.1.4 Wind Exposure Category

#### Change Type: Modification

- Wind Exposure Category A is a legacy category that no longer exists in the IBC and ASCE 7, which is the basis for determination of wind exposure categories. In the 2015 IRC, Exposure Category A is deleted.



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### R301.2.1.4 Wind Exposure Category

#### Change Type: Modification

- Exposure Category D also applies in hurricane-prone regions to residences on or near the ocean shore.



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## Table R301.2.1.5.1 Modifications for Topographic Wind Effects

**TABLE R301.2.1.5.1** Ultimate Design Wind Speed Modification for Topographic Wind Effect<sup>a,b</sup>

Ultimate Design Wind Speed from Figure R301.2(4)A	Average Slope of the Top Half of Hill, Ridge, or Escarpment (percent)						
	0.10	0.125	0.15	0.175	0.20	0.23	0.25
	Required Ultimate Design Wind Speed-up, Modified for Topographic Wind Speed Up (mph)						
110	132	137	142	147	152	158	162
115	138	143	148	154	159	165	169
120	144	149	155	160	166	172	176
130	156	162	168	174	179	N/A	N/A
140	168	174	181	N/A	N/A	N/A	N/A
150	180	N/A	N/A	N/A	N/A	N/A	N/A

- a. Table applies to a feature height of 500 feet or less and dwellings sited a distance equal or greater than half the feature height.  
 b. Where the ultimate design wind speed as modified by Table R301.2.1.5.1 equals or exceeds 140 mph, the building shall be considered as "wind design required" in accordance with Section R301.2.1.1.



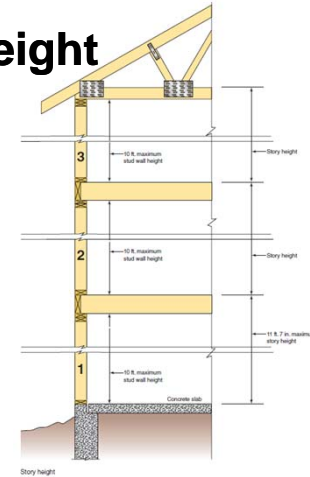
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## R301.3 Story Height

### Change Type: Modification

- Individual walls or walls studs shall be permitted to exceed [Section R301.3] limits as permitted by Chapter 6 provisions, provided that story heights are not exceeded.



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## R301.2.4 Floodplain Construction

### Change Type: Modification

- Buildings located in a flood hazard area must comply with the provisions for the most restrictive flood hazard area and may use ASCE 24 for design.



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## R302.1 Exterior Walls

### Change Type: Modification

**TABLE R302.1(1)** Exterior Walls

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	Fire-resistance rated	1 hour-tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not allowed	N/A	≤ 2 feet
	Fire-resistance rated	1 hour on the underside <sup>a,h</sup>	≥ 2 feet to < 5 feet
Openings in walls	Not fire-resistance rated	0 hours	≥ 5 feet
	Not allowed	N/A	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 6 3/8 feet
		None required	6 3/8 feet

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable.

a. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fireblocking is provided from the wall top plate to the underside of the roof sheathing.

b. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided gable vent openings are not installed.



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## R302.1 Exterior Walls

Change Type: Modification

**TABLE R302.1(2)** Exterior Walls—Dwellings with Fire Sprinklers

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	Fire-resistance rated	1 hour-tested in accordance with ASTM E 119 or UL 263 with exposure from the outside	0 feet
	Not fire-resistance rated	0 hours	3 feet*
Projections	Not allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside <sup>a,c</sup>	2 feet*
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not allowed	N/A	< 3 feet
	Unlimited	0 hours	3 feet*
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet*

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable

a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, the fire separation distance for non-rated exterior walls and rated projections shall be permitted to be reduced to zero feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.

b. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fireblocking is provided from the wall top plate to the underside of the roof sheathing.

c. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided gable vent openings are not installed.

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## R302.2 Townhouse Separation

Change Type: Modification

- The provisions for separating townhouses with structurally independent fire-resistant-rated walls in accordance with Section R302.1 have been removed in favor of the common wall provisions of Section R302.2.
- Common walls separating townhouses must now be rated for 2 hours when an automatic fire sprinkler system is not installed in the townhouse dwelling units.

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## R302.1 Exterior Walls

**TABLE 3-2** Fire Resistance of Roof Overhang Projections

Condition	Minimum Fire Separation Distance			
	5 feet	3 feet	2 feet	0 feet
Dwellings Without Sprinkler System	0 hours	1 hour on underside	1 hour on underside	NP
Dwellings with Sprinkler System	0 hours	0 hours	1 hour on underside	NP
Fireblocking above Top Plate	0 hours	0 hours	0 hours	NP
Sprinklers in All Dwellings and 6-Foot Setback on Adjoining Lot	N/A	N/A	N/A	1 hour on underside
4-Inch Overhang on Detached Garage	N/A	N/A	N/A	1 hour on underside

NP = Not Permitted  
N/A = Not Applicable

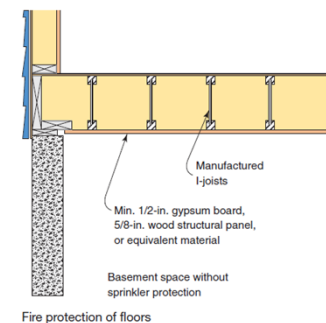
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## R302.13 Fire Protection of Floors

Change Type: Clarification

- The provisions for fire protection of floors have been relocated from Chapter 5 to the fire-resistant construction provisions of Section R302.
- New language clarifies that the code does not regulate penetrations or openings in the fire protection membrane.



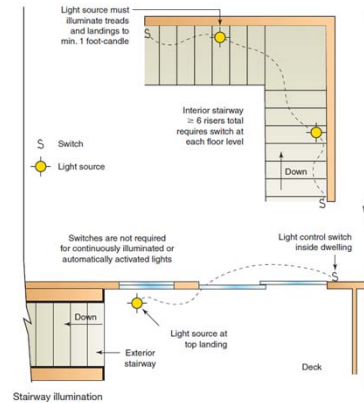
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## R303.7, R303.8 Stairway Illumination

### Change Type: Clarification

- Interior and exterior stairway illumination provisions have been placed in separate sections. Conflicting language has been removed to clarify the requirements.



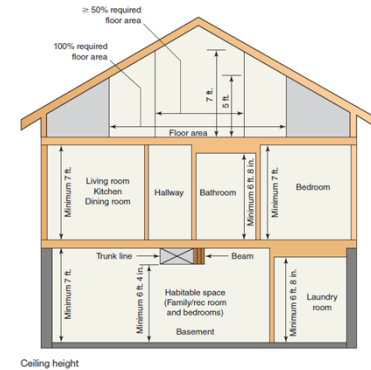
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## R305 Ceiling Height

### Change Type: Modification

- The minimum ceiling height for bathrooms, toilet rooms, and laundry rooms has been reduced to 6 feet 8 inches. The exception for allowing beams, girders, ducts, or other obstructions to project to within 6 feet, 4 inches of the finished floor has been expanded to include basements with habitable space.



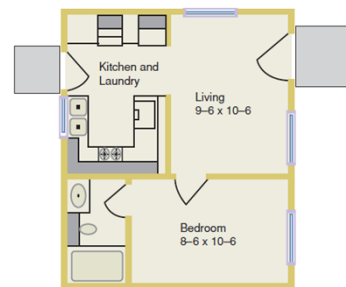
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## R304.1 Minimum Habitable Room Area

### Change Type: Modification

- The requirement for one habitable room with a minimum floor area of 120 square feet has been removed from the code.



Small dwelling complying with minimum area requirements



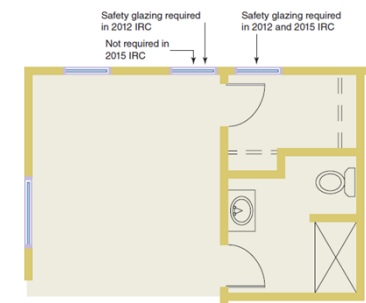
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## R308.4.2 Glazing Adjacent to Doors

### Change Type: Modification

- Glazing installed perpendicular to a door in a closed position and within 24 inches of the door only requires safety glazing if it is on the hinge side of an in-swinging door.



Glazing in windows adjacent and perpendicular to door



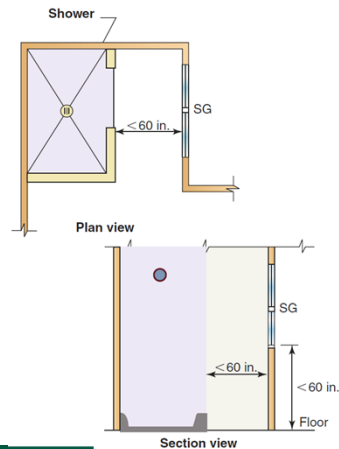
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## R308.4.5 Glazing and Wet Surfaces

### Change Type: Modification

- The exception from the safety glazing requirements for glazing that is 60 inches or greater from the water's edge of a bathtub, hot tub, spa, whirlpool, or swimming pool has been expanded to include glazing that is an equivalent distance from the edge of a shower, sauna, or steam room.



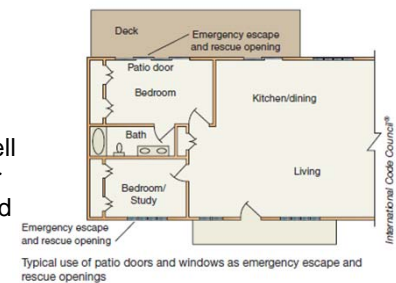
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## R310 Emergency Escape and Rescue Openings

### Change Type: Clarification

- The emergency escape and rescue openings provisions have been reorganized.
- Separate provisions spell out the requirements for windows and doors used for emergency escape and rescue.



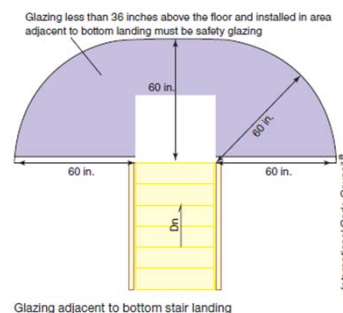
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## R308.4.7 Glazing Adjacent to the Bottom Stair Landing

### Change Type: Clarification

- Glazing adjacent to the bottom stair landing is now defined as the area in front of the plane of the bottom tread



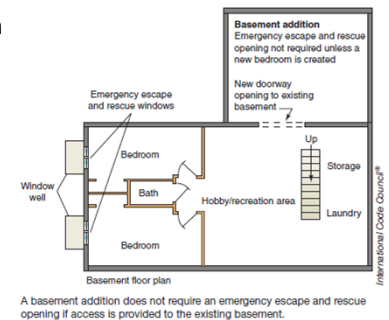
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## R310.5, R310.6 Emergency Escape and Rescue Openings for Additions, Alterations and Repairs

### Change Type: Clarification

- The basement of a dwelling addition does not require an opening if there is access to a basement that does have an opening.
- Remodeling of an existing basement does not trigger the opening requirements unless a new bedroom is created.



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## R311.1 Means of Egress

### Change Type: Clarification

- The required egress door of a dwelling unit must open directly into a public way or to a yard or court that opens to a public way.



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## R311.7.10.1 Spiral Stairways

### Change Type: Modification

- The code adds a definition of spiral stairway that omits any requirement for a center post to allow for design flexibility.
- The code now limits the size of spiral stairways by restricting the radius at the walkline to a dimension not greater than 24½ inches.
- The method of measurement for tread depth now matches the winder provisions.



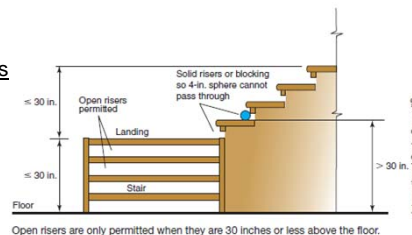
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## R311.7.3, R311.7.5.1 Stair Risers

### Change Type: Modification

- The total vertical rise in a stairway without an intermediate landing has increased from 144 inches to 147 inches.
- Open risers have been clarified. They are based on the distance above grade or the floor below.
- A new exception clarifies that open risers are permitted on spiral stairways.



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## R311.7.11, R311.7.12 Alternating Tread Devices and Ship Ladders

### Change Type: Addition

#### Alternating tread device.

- Alternating tread devices and ship ladders have been added to the stair provisions. Neither device is approved for use as a means of egress.
- A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.



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## R311.8 Ramps

**Change Type:** Modification

- Ramps that do not serve the required egress door are now permitted to have a slope not greater than 1 unit vertical in 8 units horizontal.



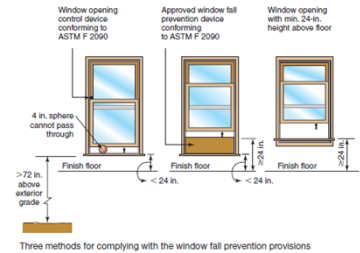
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## R312.2.1 Window Fall Protection

**Change Type:** Clarification

- The window fall prevention provisions have been revised to clarify the meaning, remove redundant language, and achieve consistency with the IBC provisions.



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## R312.1.2 Guard Height

**Change Type:** Modification

- The provision requiring that the guard height be measured from the surface of adjacent fixed seating has been removed from the code.



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## R314 Smoke Alarms

**Change Type:** Modification

- Battery-operated smoke alarms are permitted for satisfying the smoke alarm power requirements when alterations, repairs, and additions occur.
- Household fire alarm systems no longer require monitoring by an approved supervising station.
- New provisions address smoke alarms installed near bathrooms and cooking appliances.



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## R315 Carbon Monoxide Alarms

### Change Type: Modification

- Carbon monoxide alarms now require connection to the house wiring system with battery backup.
- Exterior work such as roofing, siding, windows, doors, and deck and porch additions no longer trigger the carbon monoxide alarm provisions for existing buildings.



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## R322.1, R322.2 Flood Hazards

### Change Type: Modification

- Section R322.1 is modified to emphasize that the provision applies to existing buildings in flood hazard areas where 50 percent or more of the structure has damage and requires restoration.
- Section R322.2 limits the minimum elevation allowed for dwellings in flood hazard areas.



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## R315 Carbon Monoxide Alarms

### Change Type: Modification

- An attached garage requires carbon monoxide alarms, if the garage has an opening into the dwelling.
- A carbon monoxide alarm is required in bedrooms when there is a fuel-fired appliance in the bedroom or adjoining bathroom.
- Carbon monoxide detection systems only require detectors installed in the locations prescribed by the code and not those locations described in NFPA 720.



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## R322.3 Coastal High-Hazard Areas

### Change Type: Modification

- Coastal A Zones are defined and an exception for foundation types in Coastal A Zones is added.
- Coastal A Zones = flood hazard areas that have been delineated as subject to wave heights between 1.5 feet and 3 feet.



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## R325 Mezzanines

**Change Type:** Addition

- New provisions in Section R325 place limitations on the construction of mezzanines related to ceiling height and openness consistent with the *International Building Code (IBC)*.
  - The clear height above and below mezzanine floor construction shall be not less than 7 feet (2134 mm).



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Part 3

## Building Construction

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## Code Changes

- Of the changes covered thus far, which will have the most impact on your job?



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Chapter 4

## Foundations

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## R403.1.1 Minimum Footing Size

Change Type: Modification

**TABLE R403.1(1)** Minimum Width and Thickness for Concrete Footings for Light Frame Construction (inches)<sup>a,b</sup>

Snow Load or Roof Live Load	Story and Type of Structure with Light Frame	Load-Bearing Value of Soil (psf)				
		1500	2000	2500	3000	4000
20 psf	1 story - slab on grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - with crawl space	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - plus basement	18 × 6	14 × 6	12 × 6	12 × 6	12 × 6
	2 story - slab on grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - with crawl space	16 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - plus basement	22 × 6	16 × 6	13 × 6	12 × 6	12 × 6
	3 story - slab on grade	14 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	3 story - with crawl space	19 × 6	14 × 6	12 × 6	12 × 6	12 × 6
	3 story - plus basement	25 × 8	19 × 6	15 × 6	13 × 6	12 × 6
30 psf	1 story - slab on grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - with crawl space	13 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - plus basement	19 × 6	14 × 6	12 × 6	12 × 6	12 × 6
	2 story - slab on grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - with crawl space	17 × 6	13 × 6	12 × 6	12 × 6	12 × 6
	2 story - plus basement	23 × 6	17 × 6	14 × 6	12 × 6	12 × 6
	3 story - slab on grade	15 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	3 story - with crawl space	20 × 6	15 × 6	12 × 6	12 × 6	12 × 6
	3 story - plus basement	26 × 8	20 × 6	16 × 6	13 × 6	12 × 6

(continues)

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## R403.1.1 Minimum Footing Size

2012 IRC Table R403.1, footing assumptions:

- Snow load of 50 psf
- 20 ft of tributary roof area
- 16 ft of tributary floor area
- 10-ft first-floor height
- 8-ft second- and third-floor heights

2015 IRC Tables R403.1, footing assumptions:

- Snow load of 20, 30, 50 or 70 psf
- 18 ft of tributary roof area
- 16 ft of tributary floor area
- 8-ft third floor height
- 9-ft second floor height
- 10-ft first floor height
- 3-ft crawlspace wall height
- 10-ft basement wall height,
- 10-inch basement wall thickness,
- Concrete weight of 125 pcf

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## R403.1.1 Minimum Footing Size

**TABLE R403.1(1)** (Continued)

Snow Load or Roof Live Load	Story and Type of Structure with Light Frame	Load-Bearing Value of Soil (psf)				
		1500	2000	2500	3000	4000
50 psf	1 story - slab on grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - with crawl space	16 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - plus basement	21 × 6	16 × 6	13 × 6	12 × 6	12 × 6
	2 story - slab on grade	14 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - with crawl space	19 × 6	14 × 6	12 × 6	12 × 6	12 × 6
	2 story - plus basement	25 × 7	19 × 6	15 × 6	12 × 6	12 × 6
	3 story - slab on grade	17 × 6	13 × 6	12 × 6	12 × 6	12 × 6
	3 story - with crawl space	22 × 6	17 × 6	13 × 6	12 × 6	12 × 6
	3 story - plus basement	28 × 9	21 × 6	17 × 6	14 × 6	12 × 6
70 psf	1 story - slab on grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - with crawl space	16 × 6	13 × 6	12 × 6	12 × 6	12 × 6
	1 story - plus basement	24 × 7	18 × 6	14 × 6	12 × 6	12 × 6
	2 story - slab on grade	16 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - with crawl space	21 × 6	16 × 6	13 × 6	12 × 6	12 × 6
	2 story - plus basement	27 × 9	20 × 6	16 × 6	14 × 6	12 × 6
	3 story - slab on grade	19 × 6	14 × 6	12 × 6	12 × 6	12 × 6
	3 story - with crawl space	25 × 7	18 × 6	15 × 6	12 × 6	12 × 6
	3 story - plus basement	30 × 10	23 × 6	18 × 6	15 × 6	13 × 6

a. Interpolation allowed. Extrapolation is not allowed.

b. Based on 32 foot wide house with load-bearing center wall that carries half of the tributary attic and floor framing. For every 2 feet of adjustment to the width of the house add or subtract 2 inches of footing width and 1 inch of footing thickness (but not less than 6 inches thick).

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## Minimum Required Footing

Two-story house with slab on grade foundation:

- Light-frame construction
- Soil-bearing strength = 1500 psf
- Roof Live Load = 20 psf
- 32 ft wide building with interior load-bearing wall

Minimum Footing Width		
2012	2015	Smaller footing width allowed
15×6	12×6	



Slab on grade

2015 IRC Significant Changes

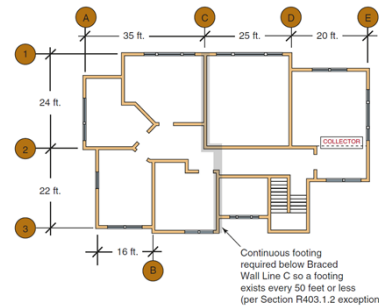
Book page 100



## R403.1.2, R602.10.9.1 Continuous Footings in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub>, and D<sub>2</sub>

### Change Type: Clarification

- Clarifies the continuous footing requirement in Section R403.1.2 and moves requirements in Section R602.10.9.1 to the foundation chapter



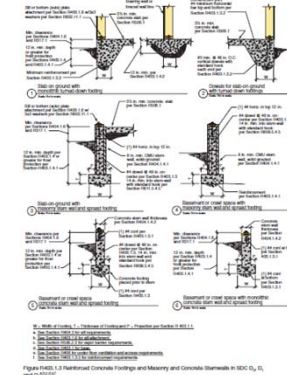
2015 IRC Significant Changes

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## R403.1.3 Footing and Stem Wall Reinforcing in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub>, and D<sub>2</sub>

### Change Type: Clarification

- Updated figures and code provisions in Section R403.1.3 now clearly define minimum required reinforcement in footings and stem walls located in Seismic Design Categories (SDC) D<sub>0</sub>, D<sub>1</sub>, and D<sub>2</sub>.



2015 IRC Significant Changes

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## R403.1.2, R602.10.9.1 Continuous Footings in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub>, and D<sub>2</sub>

TABLE 4-1 Continuous Footing Requirements in High-Seismic Regions

SDC	# of Stories	Wall Location	LENGTH OF PLAN DIMENSIONS	
			Both dimensions ≤50 ft.	One or more dimensions >50 ft.
D <sub>0</sub> , D <sub>1</sub> , D <sub>2</sub>	One Story	Exterior Walls	Continuous footing required	Continuous footing required
		Interior Walls	No continuous footings required	Continuous footings required below all interior braced wall panels
D <sub>0</sub> , D <sub>1</sub>	Two Story	Exterior Walls	Continuous footing required	Continuous footing required
		Interior Walls	No continuous footings required	Continuous footings are required below all interior braced wall panels unless the Section R403.1.2 exception is used. Then interior wall lines with braced wall panels may be supported according to the exception with footings below interior braced wall panels spaced a maximum of 50 ft or less.
D <sub>2</sub>	Two Story	Exterior Walls	Continuous footing required	Continuous footing required
		Interior Walls	Continuous footings are required below all interior braced wall panels unless the Section R403.1.2 exception is used.	Continuous footings are required below all interior braced wall panels unless the Section R403.1.2 exception is used. Then interior wall lines with braced wall panels may be supported according to the exception with footings below interior braced wall panels spaced a maximum of 50 ft or less.



2015 IRC Significant Changes

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## R403.1.6 Foundation Anchorage

### Change Type: Modification

- Anchor bolts are now required to be placed in the middle third of the sill plate. Approved anchors may be used instead of ½-inch anchor bolts.

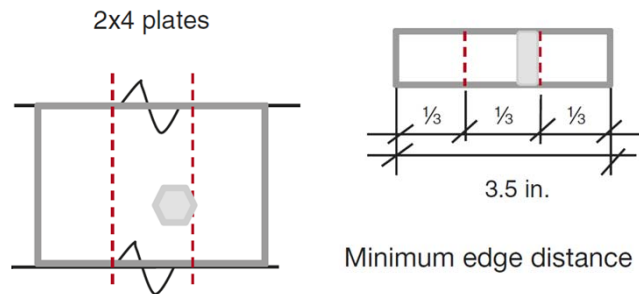


2015 IRC Significant Changes

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## R403.1.6 Foundation Anchorage

### Minimum Edge Distance



2015 IRC Significant Changes

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## R404.4 Retaining Walls

### Change Type: Modification

- Retaining walls - freestanding walls not supported at the top - with more than 48 inches of unbalanced backfill must be designed by an engineer.
- Retaining walls resisting additional lateral loads with > 24 in. of unbalanced backfill must be designed by an engineer.



2015 IRC Significant Changes

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## R404.1.4.1 Masonry Foundation Walls in SDC D<sub>0</sub>, D<sub>1</sub>, and D<sub>2</sub>

### Change Type: Modification

- Minimum vertical reinforcement in masonry stem walls has been increased from No. 3 bars to No. 4 bars spaced a maximum of 4 feet on center in grouted cells.



2015 IRC Significant Changes

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Chapter 5

# Floors

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## Tables R502.3.1(1), R502.3.1(2) Floor Joist Spans for Common Lumber Species

Change Type: Modification

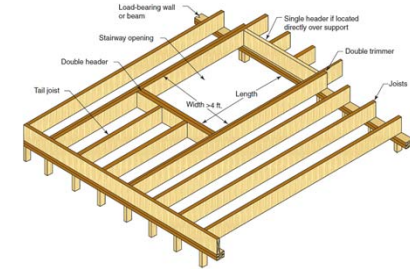
**TABLE R502.3.1(1)** Floor Joist Spans for Common Lumber Species (Residential sleeping areas, live load = 30 psf, L/A = 360<sup>a</sup>)

Joist Spacing (inches)	Species and Grade	Dead Load = 10 psf				Dead Load = 20 psf			
		2 × 6	2 × 8	2 × 10	2 × 12	2 × 6	2 × 8	2 × 10	2 × 12
		(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)
12	Douglas fir-larch SS	12-6	16-6	21-0	25-7	12-6	16-6	21-0	25-7
	Douglas fir-larch #1	12-0	15-10	20-3	24-8	12-0	15-7	19-0	22-0
	Douglas fir-larch #2	11-10	15-7	19-10	23-4	11-8	14-9	18-0	20-11
	Douglas fir-larch #3	9-11	12-7	15-5	17-10	8-11	11-3	13-9	16-0
	Hem-fir SS	11-10	15-7	19-10	24-2	11-10	15-7	19-10	24-2
	Hem-fir #1	11-7	15-3	19-5	23-7	11-7	15-3	18-9	21-9
	Hem-fir #2	11-0	14-6	18-6	22-6	11-0	14-4	17-6	20-4
	Hem-fir #3	9-8	12-4	15-0	17-5	8-8	11-0	13-5	15-7
	Southern pine SS	12-3	16-2	20-8	25-1	12-3	16-2	20-8	25-1
	Southern pine #1	11-10	15-7	19-10	24-2	11-10	15-7	18-7	22-0
	Southern pine #2	11-3	14-11	18-1	21-4	10-9	13-8	16-2	19-1
	Southern pine #3	9-2	11-6	14-0	16-6	8-2	10-3	12-6	14-9
16	Spruce-pine-fir SS	11-7	15-3	19-5	23-7	11-7	15-3	19-5	23-7
	Spruce-pine-fir #1	11-3	14-11	19-0	23-0	11-3	14-7	17-9	20-7
	Spruce-pine-fir #2	11-3	14-11	19-0	23-0	11-3	14-7	17-9	20-7
20	Spruce-pine-fir #3	9-8	12-4	15-0	17-5	8-8	11-0	13-5	15-7

## R502.10 Framing of Floor Openings

Change Type: Modification

- Requirements for header joist and trimmer connections in the framing of floor openings have been deleted.



2015 IRC Significant Changes

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## FOR EXAMPLE Floor Spans

### Bedroom

- Dead load = 10 psf
- 2x10 joists
- 16" o.c. spacing
- Southern Pine (SP) #2

Maximum Span Allowed	2012	2015
	18'-0"	15'-8"

- The SP #2 span length is significantly reduced from the 2012 IRC span length.
- Note: An SP #1 joist will span about the same length in the 2015 IRC Table R502.3.1(1) or R502.3.1(2) as the SP #2 did in the tables in the 2012 IRC.

2015 IRC Significant Changes

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## R507.1, R507.4 Decking

Change Type: Modification

- The code sets the maximum allowable spacing for deck joists supporting the various types of common decking materials.

**TABLE R507.4** Maximum joist spacing

Material type and nominal size	Maximum on-center joist spacing	
	Perpendicular to joist	Diagonal to joist <sup>a</sup>
1 1/4-inch thick wood	16 inches	12 inches
2-inch thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.3	In accordance with Section R507.3

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.

a. Maximum angle of 45 degrees from perpendicular for wood deck boards

2015 IRC Significant Changes

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## R507.2 Deck Ledger Connection to Band Joist

### Change Type: Clarification

- The deck ledger section is reorganized to better describe the minimum requirements for connection of deck ledgers to band joists.

**TABLE R507.2** Fastener Spacing for a Southern Pine or Hem-Fir Deck Ledger and A 2-Inch-Nominal Solid-Sawn Spruce-Pine-Fir Band Joist<sup>a,b</sup> Deck Ledger Connection to Band Joist<sup>c,d</sup> (Deck live load = 40 psf, deck dead load = 10 psf, snow load ≤ 40 psf)

Connection Details	Joint Span					
	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'
On-center spacing of fasteners <sup>e,f</sup>						
1/2 inch diameter lag screw with 7/16 inch maximum sheathing <sup>g</sup>	30	23	18	15	13	11
3/4 inch diameter bolt with 7/16 inch maximum sheathing <sup>g</sup>	36	30	24	20	18	15
1/2 inch diameter bolt with 7/16 inch maximum sheathing and 1/2 inch-washers <sup>g,h</sup>	36	30	24	20	18	15

For 5/8 inch = 15.8 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

a. Ledgers shall be flashed in accordance with Section R703.8 to prevent water from contacting the house band joint.  
 b. Snow load shall not be assumed to act concurrently with live load.  
 c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.  
 d. Sheathing shall be wood structural panel or solid sawn lumber.  
 e. Sheathing shall be permitted to be wood structural panel, against board, ribboard, lumber, or foam sheathing. Up to 1/2-inch thickness of stacked washers shall be permitted to substitute for up to 1/2 inch of allowable sheathing thickness when combined with wood structural panel or lumber sheathing. The minimum gap between the face of the ledger board and face of the wall sheathing shall be 1/4 inch.  
 f. Lag screws and bolts shall be staggered in accordance with Section R607.2.4.  
 g. Deck ledger shall be minimum 2 × 4 pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.  
 h. When solid stress pressure-preservative-treated deck ledgers are attached to a minimum 4-inch-thick engineered wood product (integrated composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.  
 i. A minimum 2 × 4 to 2 × 6 blocking or bracing member shall be permitted to be attached to the face of the 2-inch nominal band joist.

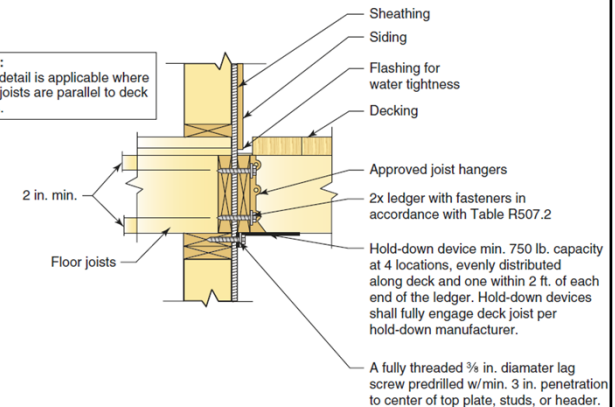


2015 IRC Significant Changes

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## R507.2.4 Alternative Deck Lateral Load Connection

**Note:**  
This detail is applicable where floor joists are parallel to deck joists.

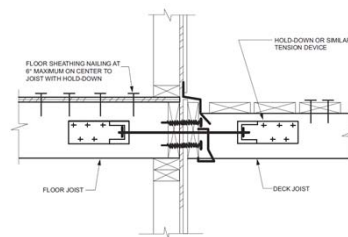


Alternative deck attachment for lateral loads

## R507.2.4 Deck Lateral Load Connection

### Change Type: Modification

- The prescriptive deck lateral load connection requires the hold-down devices to be within 2 ft of the ends of the deck.
- A new lateral load connection option prescribes four hold-downs installed below the deck structure.



2015 IRC Significant Changes

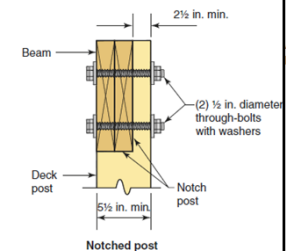
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## R507.5, R507.6, R507.7 Deck Joists and Beams

### Change Type: Addition

New sections and tables provide prescriptive methods for joists and beams in deck construction.

- Section R507.5 describes requirements for deck joists,
- Section R507.6 lists requirements for deck beams, and
- Section R507.7 describes minimum bearing requirements for joists and beams.



2015 IRC Significant Changes

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## R507.5, R507.6, R507.7 Deck Joists and Beams

**TABLE R507.5** Deck Joist Spans for Common Lumber Species<sup>f</sup> (ft.-in.)

Species <sup>a</sup>	Size	Spacing of Deck Joists With No. Cantilever <sup>e</sup> (inches)			Spacing of Deck Joists With Cantilevers <sup>e</sup> (inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	9-11	9-0	7-7	6-8	6-8	6-8
	2 × 8	13-1	11-10	9-8	10-1	10-1	9-8
	2 × 10	16-2	14-0	11-5	14-6	14-0	11-5
	2 × 12	18-0	16-6	13-6	18-0	16-6	13-6
Douglas fir-larch <sup>d</sup> , hem-fir <sup>d</sup> , spruce-pine-fir <sup>d</sup>	2 × 6	9-6	8-8	7-2	6-3	6-3	6-3
	2 × 8	12-6	11-1	9-1	9-5	9-5	9-1
	2 × 10	15-8	13-7	11-1	13-7	13-7	11-1
	2 × 12	18-0	15-9	12-10	18-0	15-9	12-10
Redwood, western cedars, ponderosa pine <sup>d</sup> , red pine <sup>d</sup>	2 × 6	8-10	8-0	7-0	5-7	5-7	5-7
	2 × 8	11-8	10-7	8-8	8-6	8-6	8-6
	2 × 10	14-11	13-0	10-7	12-3	12-3	10-7
	2 × 12	17-5	15-1	12-4	16-5	15-1	12

2015 IRC Significant Changes

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## R507.8 Deck Posts

Change Type: Addition

- Establishes minimum sizes of wood posts supporting wood decks and describes the requirements for connection of deck posts to the footing.

**TABLE R507.8** Deck Post Height<sup>a</sup>

Deck Post Size	Maximum Height
4 × 4	8'
4 × 6	8'
6 × 6	14'

For SI: 1 foot = 304.8 mm

a. Measured to the underside of the beam.

2015 IRC Significant Changes

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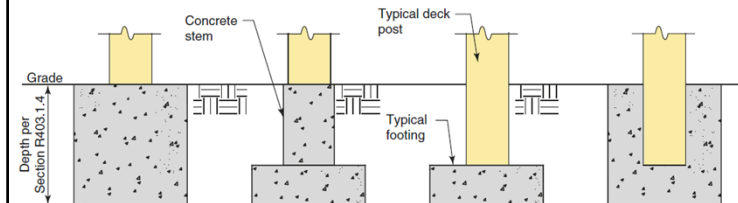
**TABLE R507.6** Deck Beam Span Lengths<sup>a,b</sup> (ft.-in.)

Species <sup>d</sup>	Size <sup>d</sup>	Deck Joist Span Less Than or Equal to: (feet)						
		6	8	10	12	14	16	18
Southern pine	2 - 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 - 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 - 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 - 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 - 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 - 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 - 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 - 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10
Douglas fir-larch <sup>d</sup> , hem-fir <sup>d</sup> , spruce-pine-fir <sup>d</sup> , redwood, western cedars, ponderosa pine <sup>d</sup> , red pine <sup>d</sup>	3 × 6 or 2 - 2 × 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 × 8 or 2 - 2 × 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 × 10 or 2 - 2 × 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 × 12 or 2 - 2 × 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 × 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 × 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 × 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 × 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 - 2 × 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 - 2 × 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3 - 2 × 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3 - 2 × 12	13-11	12-1	10-9	9-10	9-1	8-6	8-1

2015 IRC Significant Changes

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## R507.8 Deck Posts



Typical deck posts to deck footings

2015 IRC Significant Changes

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## Chapter 6

## Wall Construction

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## Table R602.3(1) Fastening Schedule—Wall Requirements

Change Type: Modification

TABLE R602.3(1) Fastening Schedule for Structural Members

Item	Description of Building Elements	Number and Type of Fastener <sup>a,b,c</sup>	Spacing of Fasteners and Location
<b>Wall</b>			
8	Stud to stud (not at braced wall panels). Built-up studs—face nail	4-8d (3/4" × 0.128") 16d common (3/4" × 0.162")	24" o.c. face nail
		10d box (3" × 0.128"); or 3" × 0.131" nails	16" o.c. face nail
9	Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)—face nail	16d box (3/4" × 0.135"); or 3" × 0.131" nails	12" o.c. face nail
		16d common (3/4" × 0.162")	16" o.c. face nail
10	Built-up header, two pieces with (2" to 2" header with 1/2" spacer)	4-8d (3/4" × 0.135") 16d common (3/4" × 0.162")	16" o.c. each edge face nail
		16d box (3/4" × 0.135")	12" o.c. each edge face nail
11	Continuous header to stud, toe nail	4-8d 5-8d box (2 1/2" × 0.113"); or 4-8d common (2 1/2" × 0.131"); or 4-10d box (3" × 0.128")	Toe nail
12	Top plate to top plate. Double top plates—face nail	4-8d (3/4" × 0.128") 16d common (3/4" × 0.162")	24" o.c. 16" o.c. face nail
		10d box (3" × 0.128"); or 3" × 0.131" nails	12" o.c. face nail

## Table R602.3(1) Fastening Schedule—Roof Requirements

Change Type: Modification

TABLE R602.3(1) Fastening Schedule for Structural Members

Item	Description of Building Elements	Number and Type of Fastener <sup>a,b,c</sup>	Spacing and Location of Fasteners
<b>Roof</b>			
1	Blocking between ceiling joists or rafters to top plate, toe nail	3-8d 4-8d box (2 1/2" × 0.113"); or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail
2	Ceiling joists to top plate, toe nail	3-8d 4-8d box (2 1/2" × 0.113"); or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Per joist, toe nail
3	Ceiling joist not attached to parallel rafter, laps over partitions—face nail [See Sections R802.3.1, R802.3.2, Table R802.5.1(9)]	3-4-8d 4-10d box (3" × 0.128"); or 3-16d common (3/4" × 0.162"); or 4-3" × 0.131" nails	Face nail
4	Ceiling joist attached to parallel rafter (heel joint) [See Sections R802.3.1, R802.3.2, Table R802.5.1(9)]	Per Table R802.5.1(9)	Face nail
5	Collar tie to rafter, face nail or 1 1/4" × 20 gage ridge strap to rafter	3-4-8d 4-10d box (3" × 0.128"); or 3-10d common (3" × 0.148"); or 4-3" × 0.131" nails	Face nail each rafter

## Table R602.3(1) Fastening Schedule—Floor Requirements

Change Type: Modification

TABLE R602.3(1) Fastening Schedule for Structural Members

Item	Description of Building Elements	Number and Type of Fastener <sup>a,b,c</sup>	Spacing of Fasteners and Location
<b>Floor</b>			
21	Joist to sill, top plate or girder	4-8d box (2 1/2" × 0.113"); or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail
22	Rim joist, band joist, or blocking to sill or top plate (roof applications also)	8d box (2 1/2" × 0.113") 8d common (2 1/2" × 0.131"); or 10d box (3" × 0.128"); or 3" × 0.131" nails	4" o.c. toe nail 6" o.c. toe nail
23	1" × 6" subfloor or less to each joist	3-8d box (2 1/2" × 0.113"); or 2-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga. 1 1/4" long	Face nail
24	2" subfloor to joist or girder, blind and face nail	2-16d 3-16d box (3/4" × 0.135"); or 2-16d common (3/4" × 0.162")	Blind and face nail
25	2" planks (plank & beam - floor & roof)	2-16d 3-16d box (3/4" × 0.135"); or 2-16d common (3/4" × 0.162")	At each bearing, face nail



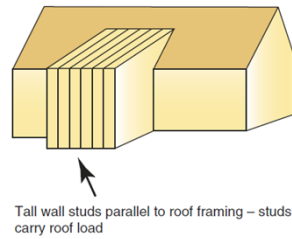
2015 IRC Significant Changes

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## R602.3.1 Stud Size, Height, and Spacing

### Change Type: Modification

- Table R602.3.1 is deleted
- The exception for walls greater than 10 feet tall is added to the text of Section R602.3.1.
- If studs in a tall wall meet Exception 2, they meet the requirements of the IRC and do not need engineering or use of an alternate standard.



2015 IRC Significant Changes

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## R602.7 Headers

### Change TYPE: Modification

- The girder and header span tables of Chapter 5 have been moved into Chapter 6, to the header section.
- Multi-ply and single header tables are combined.

**TABLE R602.5(1) R602.7(1) Girder Spans\* and Header Spans\* for Exterior Bearing Walls**  
(Maximum Spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir<sup>b</sup> and Required Number of Jack Studs)

Girders and Headers Supporting	Size	Ground Snow Load (psf)					
		Building width <sup>c</sup> (feet)					
		20		30		50	
		Span	N <sup>d</sup>	Span	N <sup>d</sup>	Span	N <sup>d</sup>
Roof and ceiling	1-2 x 4	4-0	1	2-10	1	2-3	1
	1-2 x 6	5-4	1	4-11	1	3-4	1
	1-2 x 8	6-11	1	5-11	2	3-5	2
	2-2 x 4	3-4	1	3-2	1	2-10	1
	2-2 x 6	5-5	1	4-8	1	4-2	1
	2-2 x 8	6-10	1	5-11	2	3-4	2
	2-2 x 10	8-5	2	7-3	2	6-6	2
	2-2 x 12	9-4	2	8-5	2	7-6	2
	3-2 x 6	8-4	1	7-5	1	6-6	1
	3-2 x 10	10-4	1	8-1	2	8-2	2
Roof and ceiling	3-2 x 12	12-2	2	10-7	2	9-8	2
	4-2 x 6	9-2	1	8-4	1	7-8	1
	4-2 x 10	11-4	1	10-6	1	9-5	2
	4-2 x 12	14-1	1	12-2	2	10-11	2



2015 IRC Significant Changes

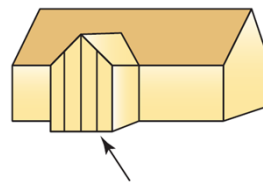
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## Prescriptive Tall Walls

### 2 x 6 Continuous Studs Used in an 18-Foot Gable end Wall

- The gable end wall studs do not support a roof load. They form a non-load-bearing wall.
- From Table R602.3(5), non-bearing walls may have studs up to 20 feet tall when using 2 x 6 lumber.



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2015 IRC Significant Changes

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## R602.7 Headers

### Change Type: Addition

A new table for girder spans for open porches is added.

**TABLE R602.7(3) Girder and Header Spans<sup>a</sup> for Open Porches**  
(Maximum Span for Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir<sup>b</sup>)

Size	Supporting Roof						Supporting Floor	
	Ground Snow Load <sup>c</sup> (psf)							
	30		50		70			
	Depth of Porch <sup>d</sup> (feet)							
	8	14	8	14	8	14		
2-2 × 6	7-6	5-8	6-2	4-8	5-4	4-0	6-4	4-9
2-2 × 8	10-1	7-7	8-3	6-2	7-1	5-4	8-5	6-4
2-2 × 10	12-4	9-4	10-1	7-7	8-9	6-7	10-4	7-9
2-2 × 12	14-4	10-10	11-8	8-10	10-1	7-8	11-11	9-0



## R602.7 Headers

### Change Type: Addition

- A new section describing rim board headers is added.
- A new section and table listing the minimum number of full height studs is added.

**TABLE R602.7.5** Minimum Number of Full Height Studs at Each End of Headers in Exterior Walls

Header Span (feet)	Maximum Stud Spacing (in.) per Table R602.3(5)	
	16	24
≤3	1	1
4	2	1
8	3	2
12	5	3
16	6	4

2015 IRC Significant Changes

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## Table R602.10.5 Contributing Length of Method CS-PF Braced Wall Panels

### Change Type: Modification

**TABLE R602.10.5** Minimum Length of Braced Wall Panels

Method (See Table R602.10.4)		Minimum Length <sup>a</sup> (in.)					Contributing Length (in.)
		Wall Height					
		8 ft.	9 ft.	10 ft.	11 ft.	12 ft.	
CS-PF	SDC A, B, and C	16	18	20	22 <sup>e</sup>	24 <sup>e</sup>	1.5 × Actual <sup>b</sup>
	SDC D <sub>0</sub> , D <sub>1</sub> and D <sub>2</sub>	16	18	20	22 <sup>e</sup>	24 <sup>e</sup>	Actual <sup>b</sup>




2015 IRC Significant Changes

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## Table R602.10.3(1) Bracing Requirements Based on Wind Speed

### Change Type: Modification

**TABLE R602.10.3(1)** Bracing Requirements Based on Wind Speed

Ultimate Design Wind Speed (mph)	Story Location	Braced Wall Line Spacing (feet)	Minimum Total Length (Feet) of Braced Wall Panels Required Along Each Braced Wall Line <sup>a</sup>			
			Method LIB <sup>b</sup>	Method GB	Methods DWL, WSP, SFB, PBS, PCF, IPS, EC-WSP, ABO, FTL, PLS, CS-SFB <sup>c</sup>	Methods CS-WSP, CS-G, CS-PF
≤15		10	3.5	3.5	2.0	2.0
		20	6.5	6.5	3.5	3.5
		30	9.5	9.5	5.5	5.5
		40	12.5	12.5	7.5	7.5
		50	15.0	15.0	9.0	9.0
		60	18.0	18.0	10.5	10.5
16-30		10	7.0	7.0	4.0	3.5
		20	12.5	12.5	7.5	6.5
		30	18.0	18.0	10.5	9.0
		40	23.5	23.5	13.5	11.5
		50	29.0	29.0	16.5	14.0
		60	34.5	34.5	20.0	17.0
>30		10	NP	18.0	6.0	5.0
		20	NP	18.5	11.0	9.0
		30	NP	27.0	15.5	13.0
		40	NP	35.0	20.0	17.0
		50	NP	43.0	24.5	21.0
		60	NP	51.0	29.0	25.0

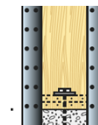
2015 IRC Significant Changes

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## R602.10.6.2 Method PFH: Portal Frame with Hold-Downs

### Change Type: Modification

- Due to recent testing of Method PFH (Portal Frame with Hold-downs), the minimum required capacity of the hold-downs is lowered to 3500 lbs in the 2015 IRC.
- The testing confirms that two sill plates are sufficient under each braced wall panel of the portal rather than the three plates required previously.



Min. (2) 3500 lb. strap-type hold-downs (embedded into concrete and nailed into framing)

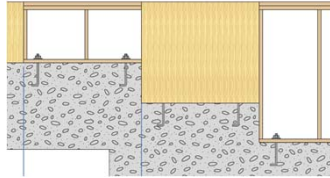
2015 IRC Significant Changes

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## R602.10.11 Cripple Wall Bracing

### Change Type: Modification

- A reduction in braced wall panel spacing is no longer required in a cripple wall line.
- References to the bracing length adjustment tables clarify that increased bracing is required if gypsum wall finish is not applied to the cripple walls.



2015 IRC Significant Changes

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## R602.12 Simplified Wall Bracing

### Change Type: Modification

**TABLE R602.12.4** Minimum Number of Bracing Units on Each Side of the Circumscribed Rectangle

Ultimate Design Wind Speed (mph)	Story Level	Eave-To Ridge Height (feet)	Minimum Number of Bracing Units on Each Long Side <sup>a,b,d</sup>					
			Length of short side (ft) <sup>c</sup>					
			10	20	30	40	50	60
115			1	2	2	2	3	3
		10	2	3	3	4	5	6
			2	3	4	6	7	8

## R602.12 Simplified Wall Bracing

### Change Type: Modification

Limits for Simplified Wall Bracing have been expanded:

- Up to 3 stories
- Wind speeds up to 130 mph
- Wind Exposure Category C



2015 IRC Significant Changes

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## R602.12 Simplified Wall Bracing

**TABLE R602.12.4** (Continued)

Ultimate Design Wind Speed (mph)	Story Level	Eave-To Ridge Height (feet)	Minimum Number of Bracing Units on Each Long Side <sup>a,b,d</sup>					
			Length of short side (ft) <sup>c</sup>					
			10	20	30	40	50	60
130			1	2	2	3	3	4
		10	2	3	4	5	6	7
			2	4	5	7	8	10
			2	3	3	4	4	6



## R603.9.5 Structural Sheathing over Steel Framing for Stone and Masonry Veneer

### Change Type: Modification

**TABLE R603.9.5(1)** Required Length of Full Height Sheathing and Associated Overturning Anchorage for Walls Supporting Walls with Stone or Masonry Veneer and Using 33-mil Cold-Formed Steel Framing and 6-inch Screw Spacing on the Perimeter of Each Panel of Structural Sheathing

Seismic Design Category	Story	Braced Wall Line Length (feet)						Single-Story Hold-Down Force (pounds)	Cumulative Hold-Down Force (pounds)
		10	20	30	40	50	60		
D <sub>s</sub>	1	3.3	4.7	6.1	7.4	8.8	10.2	3,360	—
	2	5.3	8.7	12.1	15.4	18.8	22.2	3,360	6,720
	3	7.3	12.7	18.0	23.4	28.8	34.2	3,360	10,080

2015 IRC Significant Changes

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## R606.3.5 Grouting Requirements for Masonry Construction

### Change Type: Modification

- Grouting above-ground masonry walls now combines requirements for single, multiwythe, and reinforced masonry construction in one section.
- Clarified provisions address grout placement, cleanouts, and construction for all three types of masonry construction.



2015 IRC Significant Changes

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## R606 Masonry Walls

### Change Type: Reorganization

- Sections R606, R607, R608, and R609 have been organized into one section providing requirements for masonry construction of single- and two-family dwellings and townhouses.



2015 IRC Significant Changes

Book pages 161-163

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## R610.7 Drilling and Notching in Structural Insulated Panels

### Change Type: Modification

- Drilling and notching provisions for structural insulated panels (SIP) are clarified.
- Horizontal chases, used for switch-box wiring, need to be placed 48 in. above the bottom edge of the SIP



2015 IRC Significant Changes

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## Code Changes

Of the changes covered thus far, which will have the most impact on your job?



2015 IRC Significant Changes

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## R703.3 Siding Material Thickness and Attachment

**Change Type:** Modification

- Table R703.4, Weather Resistant Siding Attachment and Minimum Thickness, is simplified.
- New code language is added to Section R703 to clarify limitations of use of the table and to describe fastener type, length, and penetration.

**TABLE R703.3.1** Limits for Attachment per Table R703.3(1)

Ultimate Wind Speed (mph, 3-second gust)	Maximum Mean Roof Height		
	B	C	D
115	NL	50'	20'
120	NL	30'	DR
130	60'	15'	DR
140	35'	DR	DR

For SI: 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s  
 NL = not limited by Table R703.3.1, DR = Design Required

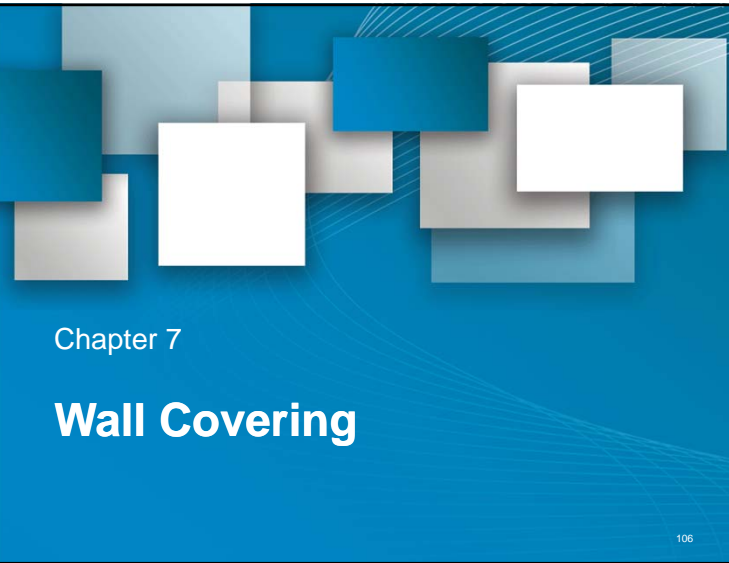


2015 IRC Significant Changes

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## Chapter 7

# Wall Covering



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## R703.3 Siding Material Thickness and Attachment

**TABLE R703.3.2** Optional Siding Attachment Schedule for Fasteners  
 Where No Stud Penetration Necessary

Application	Number and type of Fastener	Spacing of Fasteners <sup>h</sup>
Exterior wall covering (weighing 3 psf or less) attachment to wood structural panel sheathing, either direct or over foam sheathing a maximum of 2 inches thick. <sup>a</sup>	Ring shank roofing nail (0.120" min. dia.)	12" o.c.
	Ring shank nail (0.148" min. dia.)	15" o.c.
Note: Does not apply to vertical siding.	No. 6 screw (0.138" min. dia.)	12" o.c.
	No. 8 screw (0.164" min. dia.)	16" o.c.

- a. Fastener length shall be sufficient to penetrate back side of the wood structural panel sheathing by at least 1/4 inch. The wood structural panel sheathing shall be not less than 7/16 inch in thickness.
- b. Spacing of fasteners is per 12 inches of siding width. For other siding widths, multiply spacing of fasteners above by a factor of 12/s, where s is the siding width in inches. Fastener spacing shall never be greater than the manufacturer's minimum recommendations.



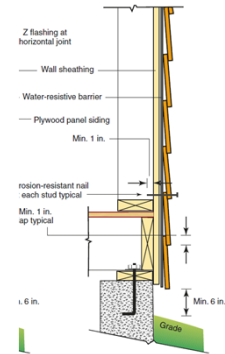
2015 IRC Significant Changes

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## R703.5 Wood, Hardboard, and Wood Structural Panel Siding

### Change Type: Modification

- New subsections describe the specific requirements for stud spacing and minimum siding lap relevant to horizontal wood siding, vertical wood siding, and panel siding products.



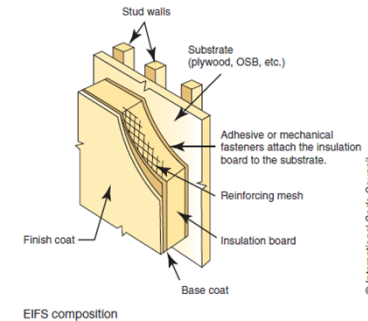
2015 IRC Significant Changes

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## R703.9 Exterior Insulation and Finish Systems (EIFS)

### Change Type: Modification

- Limitations for exterior insulation and finish systems with and without drainage have been added to the 2015 IRC.



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2015 IRC Significant Changes

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## R703.6 Wood Shakes and Shingles on Exterior Walls

### Change Type: Modification

- The provisions for the application of wood shakes and shingles on exterior walls have been reorganized to give more information within tables for ease of use.

**TABLE R703.6.1** Maximum Weather Exposure for Wood Shakes and Shingles on Exterior Walls<sup>a,b,c</sup> (Dimensions are in inches)

Length	Exposure for Single Course	Exposure for Double Course
Shingles <sup>a</sup>		
16	27½" Z	12" <sup>b</sup>
18	30½" Z	14" <sup>c</sup>
24	44½" 10½"	16" <sup>d</sup>
Shakes <sup>a</sup>		
18	30½" Z	14"
24	44½" 10½"	18"

For SI: 1 inch = 25.4 mm.

a. Dimensions given are for No. 1 grade.

b. A maximum 40-inch exposure is permitted for No. 2 grade.

c. A maximum 44-inch exposure is permitted for No. 2 grade.

d. A maximum 14-inch exposure is permitted for No. 2 grade.



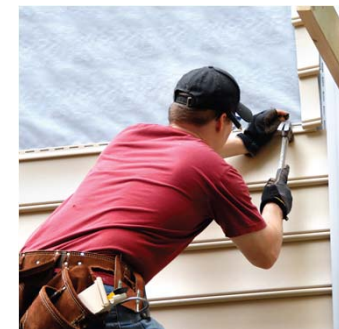
2015 IRC Significant Changes

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## R703.11.1 Vinyl Siding Attachment

### CHANGE TYPE: Addition

- This code change clarifies nailing penetration and spacing requirements for horizontal and vertical vinyl siding.



2015 IRC Significant Changes

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## R703.13, R703.14 Insulated Vinyl Siding and Polypropylene Siding

### Change Type: Addition

- New sections set minimum requirements for insulated vinyl siding and polypropylene siding.
- Siding must meet ASTM D 7793 and ASTM D 7254 respectively.
- Insulated Vinyl Siding.** A vinyl cladding product with manufacturer-installed foam plastic insulating material as an integral part of the cladding product, having a minimum thermal resistance of not less than R-2.
- Polypropylene Siding.** A shaped material, made principally from polypropylene homopolymer, or copolymer, that in some cases contains fillers or reinforcements, that is used to clad exterior walls or buildings.



2015 IRC Significant Changes

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## Chapter 8

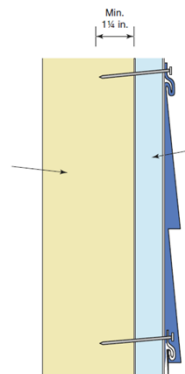
# Roof-Ceiling Construction

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## R703.15, R703.16, R703.17 Cladding Attachment over Foam Sheathing

### Change Type: Addition

- Three new sections set minimum requirements for:
  - Cladding attachment over foam sheathing to wood framing (R703.15)
  - Cold-formed steel framing (R703.16)
  - Masonry or concrete walls (R703.17)
- For light-frame construction, prescriptive requirements are given
- Concrete and masonry construction continues to require engineered design



2015 IRC Significant Changes

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## Tables R802.4, R802.5 Ceiling Joist and Rafter Tables

### Change Type: Modification

**TABLE R802.4(1)** Ceiling Joist Spans for Common Lumber Species  
(Uninhabitable attics without storage, live load = 10 psf, L/A = 240)

Ceiling Joist Spacing (inches)		Dead Load = 5 psf			
		2 × 4	2 × 6	2 × 8	2 × 10
		Maximum ceiling joist spans			
		(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)
16	Douglas fir-larch SS	11-11	18-9	24-8	Note a
	Douglas fir-larch #1	11-6	18-1	23-10	Note a
	Douglas fir-larch #2	11-3	17-8	23-4	Note a
	Douglas fir-larch #3	9-7	14-1	17-10	21-9
	Hem-fir SS	11-3	17-8	23-4	Note a
	Hem-fir #1	11-0	17-4	22-10	Note a
	Hem-fir #2	10-6	16-6	21-9	Note a
	Hem-fir #3	9-5	13-9	17-5	21-3
	Southern pine SS	11-9	18-5	24-3	Note a
	Southern pine #1	11-3	17-8	23-10	Note a
	Southern pine #2	10-9	16-11	21-7	25-7
	Southern pine #3	8-9	12-11	16-3	19-9



2015 IRC Significant Changes

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**FOR EXAMPLE**

## Ceiling Joint Spans

**Uninhabitable attic with limited storage**

- LL = 20 psf
- DL = 10 psf
- 2x10 joists
- 16" o.c. spacing
- SP #2

Maximum Span Allowed	2012	2015
	20'-9"	18'-1"

The SP #2 span length is significantly reduced from the 2012 IRC span length.

**Note:** An SP #1 joist will span about the same length in the 2015 IRC Table R802.4(1) or R802.4(2) as the SP #2 did in the tables in the 2012 IRC.

2015 IRC Significant Changes 117

## Table R806.5 Insulation for Condensation Control in Unvented Attics

Change Type: Modification

**TABLE R806.5** Insulation for Condensation Control

Climate Zone	Minimum Rigid Board on Air-Impermeable Insulation <i>R-Value</i> <sup>a,b</sup>
2B and 3B tile roof only	0 (none required)
1, 2A, 2B, 3A, 3B, 3C	R-5
4C	R-10
4A, 4B	R-15
5	R-20
6	R-25
7	R-30
8	R-35

2015 IRC Significant Changes 119

## R806.1 Attic Ventilation

Change Type: Deletion

- The 2012 IRC exception allowing the building official to waive ventilation requirements due to atmospheric or climatic conditions has been deleted.



2015 IRC Significant Changes 118

Chapter 9

## Roof Assemblies

120



# R905.1.1 Underlayment

Change Type: Modification

TABLE R905.1.1(1) Underlayment Types

Roof Covering	Section	Maximum Ultimate Design Wind Speed, $V_{ult} < 140$ mph	Maximum Ultimate Design Wind Speed, $V_{ult} \geq 140$ mph
Asphalt shingles	R905.2	ASTM D 226 Type I; ASTM D 4869 Type I, II, III, or IV; ASTM D 6757	ASTM D 226 Type II; ASTM D 4869 Type IV; ASTM D 6757
Clay and concrete tile	R905.3	ASTM D 226 Type II; ASTM D 2626 Type I; ASTM D 6380 Class M mineral surfaced roll roofing	ASTM D 226 Type II; ASTM D 2626 Type I; ASTM D 6380 Class M mineral surfaced roll roofing
Metal roof shingles	R905.4	ASTM D 226 Type I or II; ASTM D 4869 Type I, II, III, or IV	ASTM D 226 Type II; ASTM D 4869 Type IV
Mineral-surfaced roll roofing	R905.5	ASTM D 226 Type I or II; ASTM D 4869 Type I, II, III, or IV	ASTM D 226 Type II; ASTM D 4869 Type IV
Slate and slate-type shingles	R905.6	ASTM D 226 Type I; ASTM D 4869 Type I, II, III, or IV	ASTM D 226 Type II; ASTM D 4869 Type IV
Wood shingles	R905.7	ASTM D 226 Type I or II; ASTM D 4869 Type I, II, III, or IV	ASTM D 226 Type II; ASTM D 4869 Type IV
Wood shakes	R905.8	ASTM D 226 Type I or II; ASTM D 4869 Type I, II, III, or IV	ASTM D 226 Type II; ASTM D 4869 Type IV
Metal panels	R905.10	Manufacturer's instructions	ASTM D 226 Type II; ASTM D 4869 Type IV



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# R905.1.1 Underlayment

Change Type: Modification

TABLE R905.1.1(3) Underlayment Attachment

Roof Covering	Section	Maximum Ultimate Design Wind Speed, $V_{ult} < 140$ mph	Maximum Ultimate Design Wind Speed, $V_{ult} \geq 140$ mph
Asphalt shingles	R905.2	Fastened sufficiently to hold in place.	
Clay and concrete tile	R905.3	The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of 12 inches between side laps with a 6-inch spacing at the side laps. Underlayment shall be attached using metal or plastic cap nails or cap staples with nominal cap diameter of not less than 1 inch. Metal caps shall have a thickness not less than 32-gauge sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap-nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. Staple gage shall be not less than 21 gage. Cap-nail shank and cap staple legs shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.	
Metal roof shingles	R905.4	The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of	



2015 IRC Significant Changes

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# R905.1.1 Underlayment

Change Type: Modification

TABLE R905.1.1(2) Underlayment Application

Roof Covering	Section	Maximum Ultimate Design Wind Speed, $V_{ult} < 140$ mph	Maximum Ultimate Design Wind Speed, $V_{ult} \geq 140$ mph
Asphalt shingles	R905.2	For roof slopes from two units vertical in 12 units horizontal (2:12), up to four units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied in the following manner. Apply a 19-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal.	Same as Maximum Ultimate Design Wind Speeds, $V_{ult} < 140$ mph except all laps shall be a minimum of 4 inches.
		For roof slopes of four units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet.	
		For roof slopes from two and one-half units vertical in 12 units horizontal (2 1/2:12), up to four units vertical in 12 units horizontal (4:12), underlayment	



2015 IRC Significant Changes

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# R905.7.5 Wood Shingle Application

Change Type: Modification

- Minimum requirements for application of wood shingles are expanded
- Fastener type is clarified
- New table lists minimum sizes for box nails
- Labeling requirements for fastener packaging have also been added

TABLE R905.7.5(2) Nail Requirements for Wood Shakes and Wood Shingles

Shakes	Nail Type and Minimum Length	Minimum Head Size	Minimum Shank Diameter
18" Straight-Split	5d Box 1 1/4"	0.19"	0.08"
18" and 24" Handsplit and Resawn	6d Box 2"	0.19"	0.0915"
24" Tapersplit	5d Box 1 1/4"	0.19"	0.08"
18" and 24" Tapersawn	6d Box 2"	0.19"	0.0915"
Shingles	Nail Type and Minimum Length	Minimum Head Size	Minimum Shank Diameter
16" and 18"	3d Box 1 1/4"	0.19"	0.08"
24"	4d Box 1 1/2"	0.19"	0.08"



2015 IRC Significant Changes

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## R905.8.6 Wood Shake Application

### Change Type: Modification

- Minimum requirements for application of wood shakes are expanded
- Fastener type is clarified
- New table lists minimum sizes for box nails
- Labeling requirements for fastener packaging have also been added

TABLE R905.7.5(2) Nail Requirements for Wood Shakes and Wood Shingles

Shakes	Nail Type and Minimum Length	Minimum Head Size	Minimum Shank Diameter
14" Straight Split	5d Box 1 1/2"	0.19"	0.08"
18" and 24" Handsplit and Riven	6d Box 2"	0.19"	0.0913"
24" Tapersplit	5d Box 1 1/2"	0.19"	0.08"
18" and 24" Tapersplit	6d Box 2"	0.19"	0.0913"
Shingles	Nail Type and Minimum Length	Minimum Head Size	Minimum Shank Diameter
16" and 18"	3d Box 1 1/2"	0.19"	0.08"
24"	4d Box 1 1/2"	0.19"	0.08"



2015 IRC Significant Changes

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## R907 Rooftop-Mounted Photovoltaic Systems

### Change Type: Addition

- Requirements and limits for rooftop-mounted photovoltaic systems are added
- Complement requirements in Section R324
- References NFPA 70
- Panels and modules must meet UL 1703



2015 IRC Significant Changes

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## R905.16 Photovoltaic Shingles

### Change Type: Modification

- Contains requirements for roof decks, minimum roof deck slope, underlayment, underlayment application, ice barrier, and underlayment for high-wind areas.



2015 IRC Significant Changes

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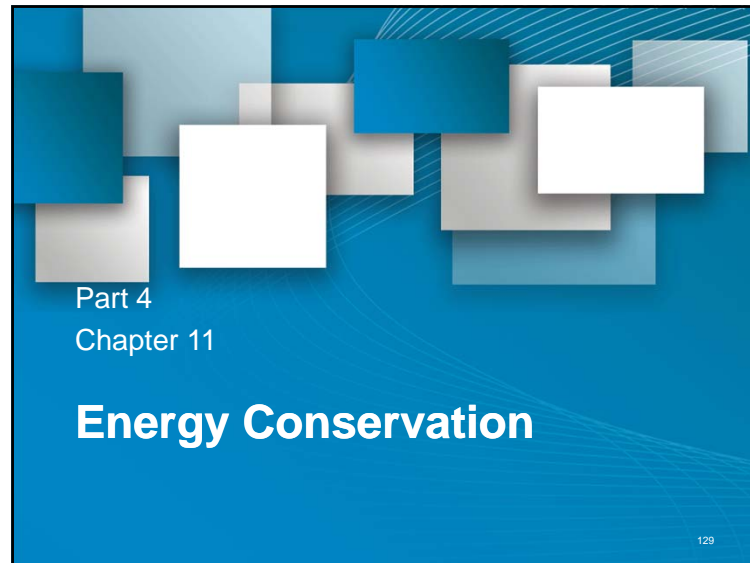
## Code Changes

Of the changes covered thus far, which will have the most impact on your job?



2015 IRC Significant Changes

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### N1101.14 Permanent Energy Certificate

#### Change Type: Modification

- A permanent energy certificate is to be placed on an interior wall in proximity to the furnace, in a utility room, or in another approved location inside the building.

Energy Efficiency Certificate	
Insulation Rating	
Ceiling/roof	
Walls	
Floors	
Ducts	
Air-leakage Test Results	
Blower door	Duct testing
Fenestration Rating	
Window	
Opaque door	
Skylight	
Equipment Performance	
Heating system	
Cooling system	
Water heater	
Designer/builder	

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Permanent energy certificate



2015 IRC Significant Changes

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### N1101.13 Compliance Paths

#### Change Type: Modification

- The mandatory provisions combined with either the prescriptive provisions or the performance provisions are deemed to comply with the code.
- Sections N1101.14 through N1104.
  - Section N1105 and the provisions of Sections N1101.14 through N1104 labeled "Mandatory."
  - An energy rating index (ERI) approach in Section N1106.



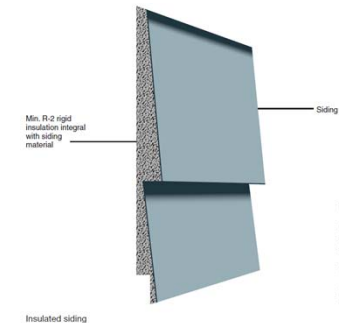
2015 IRC Significant Changes

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### N1102.1.3 R-Value Computation—Insulated Siding

#### Change Type: Modification

- Insulated siding may be used in the calculation for satisfying the wall insulation *R*-value.
- The labeled *R*-value for the siding must be reduced by *R*-0.6 for calculation purposes.



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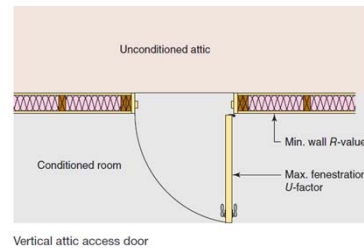
2015 IRC Significant Changes

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## N1102.2.4 Access Hatches and Doors

**Change Type:** Clarification

- Vertical doors that access unconditioned attics and crawl spaces do not require an  $R$ -value to match the required wall insulation. Such doors must comply with the fenestration  $U$ -factor requirements of Table N1102.1.2.



2015 IRC Significant Changes

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## N1102.2.8, Table N1102.4.1.1 Floor Framing Cavity Insulation

**Change Type:** Modification

- An air space may exist above required insulation installed in a floor framing cavity above unconditioned space.
- Table N1102.4.1.1 has been reformatted into three columns to separate the air barrier requirements from the insulation requirements.

**TABLE N1102.4.1.1 (402.4.1.1) Air Barrier and Insulation Installation**

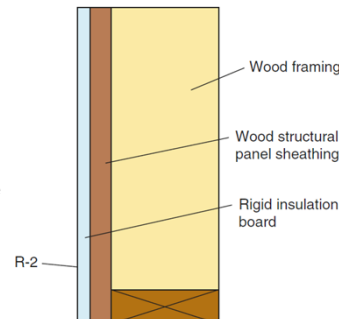
Component	Air Barrier Criteria	Insulation Installation Criteria
Floors (including above garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the topside of sheathing, or continuous insulation installed on the underside of floor framing, and extends from the bottom to the top of all perimeter floor framing members.

(Portions of table not shown for brevity and clarity.)

## N1102.2.7, Table N1102.1.2 R-Value Reduction for Walls with Partial Structural Sheathing

**Change Type:** Clarification

- The allowed  $R$ -value reduction for portions of walls with structural sheathing and requiring continuous insulation has been moved from footnote h of Table N1102.1.2 and placed in a new section to clarify the application.



2015 IRC Significant Changes

134

## Table N1102.4.1.1 Insulation at Wall Corners and Headers

**Change Type:** Clarification

- Insulation requirements at framed wall corners and headers only apply when there is space to install insulation.
- Minimum insulation thermal resistance is  $R$ -3 per inch of insulation.

**TABLE N1102.4.1.1 (402.4.1.1) Air Barrier and Insulation Installation**

Component	Air Barrier Criteria	Insulation Installation Criteria
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of $R$ -3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.

(Portions of table not shown for brevity and clarity.)

## N1102.4.2, Table N1102.4.1.1 Wood-Burning Fireplace Doors

### Change Type: Modification

- Doors on wood-burning fireplaces must be listed for the application. The requirement for gasketed doors on fireplaces has been removed.

**TABLE N1102.4.1.1 (R402.4.1.1)** Air Barrier and Insulation Installation

Component	Air Barrier Criteria	Insulation Installation Criteria
Fireplace	An air barrier shall be installed on fireplace walls. Fireplaces shall have gasketed doors.	

(Portions of table not shown for brevity and clarity.)



2015 IRC Significant Changes

137

## N1103.5 Heated Water Circulation and Temperature Maintenance Systems

### Change Type: Modification

- Automatic controls are required to maintain hot water temperature for heated water circulation systems and for heat trace temperature maintenance systems.
- Continuously operating circulation pumps are no longer permitted.
- Heat trace systems must comply with one of the referenced standards.



2015 IRC Significant Changes

139

## N1103.3 Duct Sealing and Testing

### Change Type: Modification

- The duct sealing and testing provisions have been reorganized to clarify the application.
- The maximum duct leakage rates are now prescriptive rather than mandatory provisions to accommodate design flexibility.



2015 IRC Significant Changes

138



## Code Changes

Of the changes in the energy section, which will have the most impact on your job?



2015 IRC Significant Changes

140



## Part 5

## Mechanical

141

## M1502.4.4, M1502.4.5 Dryer Exhaust Duct Power Ventilators

### Change Type: Addition

- The code now recognizes the use of dryer exhaust duct power ventilators (DEDPVs) to increase the allowable exhaust duct length for clothes dryers.



2015 IRC Significant Changes

143

## Chapter 15

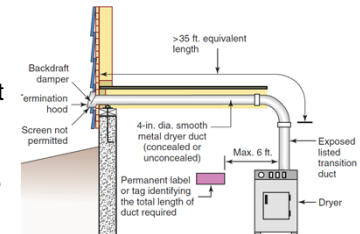
## Exhaust Systems

142

## M1502.4.6 Dryer Duct Length Identification

### Change Type: Modification

- A permanent label identifying the concealed length of the dryer exhaust duct is no longer required where the equivalent duct length does not exceed 35 feet.
- For the dryer exhaust duct exceeding 35 feet, a label or tag is required whether the duct is concealed or not.



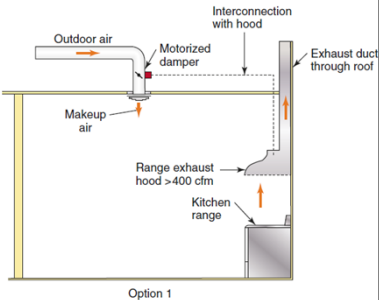
2015 IRC Significant Changes

144

M1503.4 Makeup Air for Range Hoods

Change Type: Modification

- Automatic operation of a mechanical damper is no longer required for kitchen exhaust systems exceeding a rating of 400 cubic feet per minute.
- Transfer openings are permitted to obtain makeup air from rooms other than the kitchen.



Chapter 16

Duct Systems

M1506.2 Exhaust Duct Length

Change Type: Addition

- Maximum exhaust duct lengths are based on duct diameter, type of duct and the exhaust fan airflow rating.

TABLE M1506.2 Duct Length

Duct Type	Flex Duct								Smooth-Wall Duct							
Fan airflow rating (CFM @ 0.25 inch w.c.)	50	80	100	125	150	200	250	300	50	80	100	125	150	200	250	300
Diameter <sup>a</sup> (inches)	Maximum length <sup>c, d, e</sup> (feet)															
3	X	X	X	X	X	X	X	X	5	X	X	X	X	X	X	X
4	56	4	X	X	X	X	X	X	114	31	10	X	X	X	X	X
5	NL	81	42	16	2	X	X	X	NL	152	91	51	28	4	X	X
6	NL	NL	158	91	55	18	1	X	NL	NL	NL	168	112	53	25	9
7	NL	NL	NL	NL	NL	161	78	40	19	NL	NL	NL	NL	NL	148	88
8 and above	NL	NL	NL	NL	NL	189	111	69	NL	NL	NL	NL	NL	NL	198	133



a. Fan airflow rating shall be in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.  
b. For non-circular ducts, calculate the diameter as four times the cross-sectional area divided by the perimeter.  
c. This table assumes that elbows are not used. Fifteen feet (5 m) of allowable duct length shall be deducted for each elbow installed in the duct run.  
d. NL = no limit on duct length of this size.  
e. X = not allowed. Any length of duct of this size with assumed turns and fittings will exceed the rated pressure drop.

M1601.1.1, Table M1601.1.1, M1601.2 Above-Ground Duct Systems

Change Type: Modification

- Duct system requirements reference applicable standards.
- The table for material thickness of metal ducts is updated to be consistent with the SMACNA sheet metal construction standard.

TABLE M1601.1(2) M1601.1.1 Duct Construction Minimum Sheet Metal Thickness for Single Dwelling Units' Gages of Metal Ducts and Plenums Used For Heating or Cooling

ROUND DUCT DIAMETER (inches)	STATIC PRESSURE			
	1/2-inch water gage		1-inch water gage	
	Galvanized	Aluminum	Galvanized	Aluminum
≤12	0.013	0.018	0.013	0.018
12 to 14	0.013	0.018	0.016	0.023
15 to 17	0.016	0.023	0.019	0.027
18	0.016	0.023	0.024	0.034
19 to 20	0.019	0.027	0.024	0.034

RECTANGULAR DUCT DIMENSION (inches)	STATIC PRESSURE			
	1/2-inch water gage		1-inch water gage	
	Galvanized	Aluminum	Galvanized	Aluminum
≤8	0.013	0.018	0.013	0.018
9 to 10	0.013	0.018	0.016	0.023
11 to 12	0.016	0.023	0.019	0.027
13 to 16	0.019	0.027	0.019	0.027
17 to 18	0.019	0.027	0.024	0.034
19 to 20	0.024	0.034	0.024	0.034

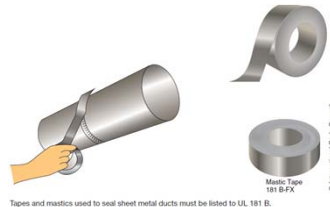
For St. 1 inch = 25.4 mm, 1-inch water gage = 249 Pa.  
a. Ductwork that exceeds 20 inches by dimension or exceeds a pressure of 1-inch water gage (249 Pa) shall be constructed in accordance with SMACNA HVAC Duct Construction Standards Metal and Flexible.



## M1601.4 Duct Installation

### Change Type: Modification

- Tapes and mastics used to seal sheet metal ducts must be listed to UL 181 B similar to sealing of flexible ducts.
- Snap-lock and button-lock seams are no longer exempt from the sealing requirements.



2015 IRC Significant Changes

149

## Part 6 Chapter 24

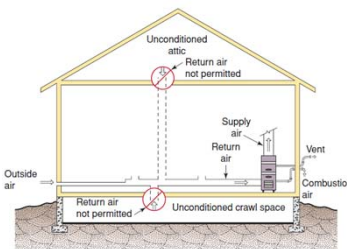
# Fuel Gas

151

## M1602 Return Air

### Change Type: Modification

- Provisions for return air have been simplified and clarified.
- The intent to keep contaminants out of the airstream of the heating, ventilation and air-conditioning (HVAC) system is unchanged.



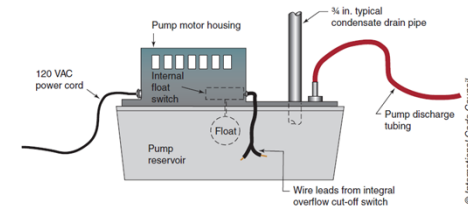
2015 IRC Significant Changes

150

## G2404.11 Condensate Pumps

### Change Type: Addition

- Condensate pumps located in uninhabitable spaces must be connected to the appliance to shut down the equipment in the event of pump failure.



Condensate pumps located in attics and crawl spaces must be connected to the appliance such that when the pump fails the appliance shuts off.



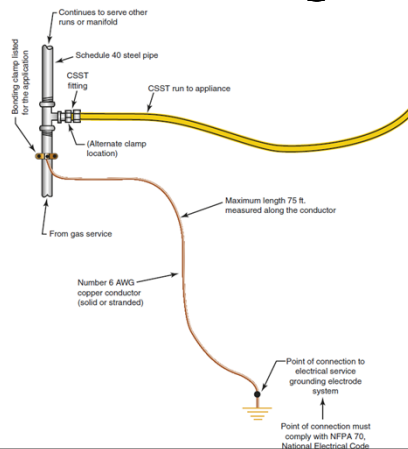
2015 IRC Significant Changes

152

## G2411.1.1 Electrical Bonding of Corrugated Stainless Steel Tubing

### Change Type: Modification

- The maximum allowable length of the bonding jumper for corrugated stainless steel tubing (CSST) is 75 feet.

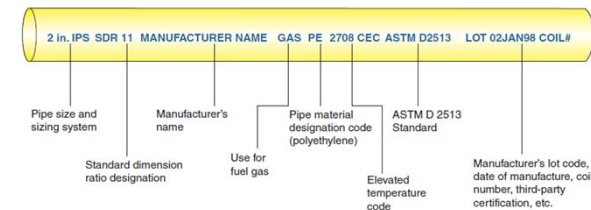


2015 IRC Significant Changes

## G2414.6 Plastic Pipe, Tubing and Fittings

### Change Type: Modification

- PVC and CPVC pipe are expressly prohibited materials for supplying fuel gas.



Approved polyethylene gas piping with markings in accordance with the code and ASTM D 2513

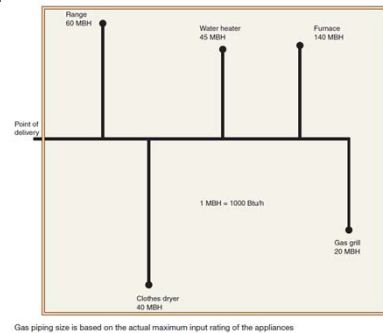
2015 IRC Significant Changes

155

## G2413.2 Maximum Gas Demand

### Change Type: Modification

- Table G2413.2 was deleted to clarify that the code requires the actual maximum input rating of the appliances to be known and used for gas pipe sizing purposes.



2015 IRC Significant Changes

154

## G2415.5 Fittings in Concealed Locations

### Change Type: Clarification

- Reorganized section.
- Threaded elbows, tees and couplings are now specifically approved for concealed locations as the code always intended.
  - Threaded elbows, tees and tapered couplings
  - Brazed fittings
  - Welded fittings
  - Fittings listed to ANSI LC-1/CSA 6.26 or ANSI LC-4.

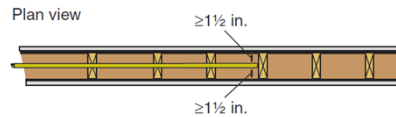
2015 IRC Significant Changes

156

## G2415.7 Protection of Concealed Piping Against Physical Damage

**Change Type:** Modification

- Protection of piping now addresses piping parallel to framing members and piping within framing members.
- The new text requires that protection extend well beyond the edge of members that are bored or notched.



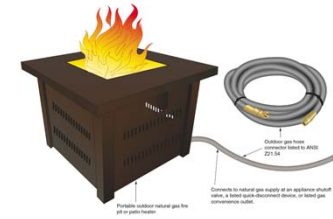
2015 IRC Significant Changes

157

## G2422.1 Connecting Portable and Movable Appliances

**Change Type:** Modification

- Portable gas appliances used outdoors require gas hoses designed for the purpose.
- Such hoses must comply with ANSI Z21.54.



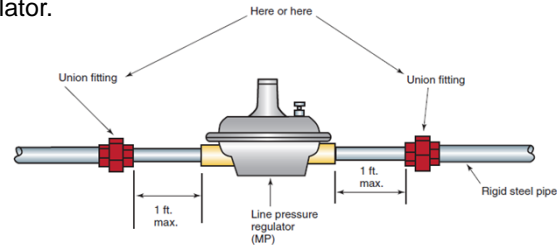
2015 IRC Significant Changes

159

## G2421.2 Medium-Pressure Regulators

**Change Type:** Modification

- Medium-Pressure (MP) line regulators installed in rigid piping must have a union installed to allow removal of the regulator.



(Only one union is required and it may be placed either upstream or downstream of the regulator.)

Union required for Medium-Pressure (MP) regulator connected to rigid piping



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## G2426.7.1 Door Clearance to Vent Terminals

**Change Type:** Addition

- An appliance vent terminal is not permitted in a location within 12 inches of the arc of a swinging door.



2015 IRC Significant Changes

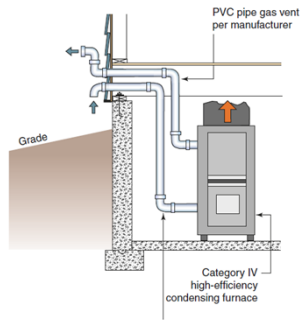
160



## G2427.4.1, G2427.6.8.3 Plastic Piping for Appliance Vents

### Change Type: Modification

- Plastic pipe for venting appliances must be:
  - Listed for the specific appliance
  - Appliance manufacturer identifies the type of piping and size allowed



2015 IRC Significant Changes

161

## G2439.4, G2439.7 Clothes Dryer Exhaust Ducts

### Change Type: Modification

- New text recognizes the use of dryer exhaust duct power ventilators (DEDPVs) to increase the allowable exhaust duct length for clothes dryers.
- For dryer exhaust duct exceeding 35 feet, a label or tag is required whether the duct is concealed or not.
- Instead of prohibiting all duct fasteners such as screws and rivets, the code now limits the penetration of fasteners, where installed.



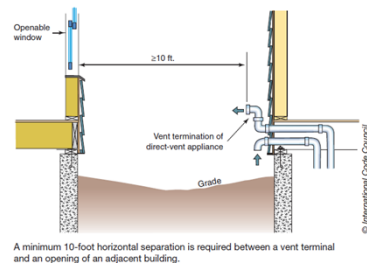
2015 IRC Significant Changes

163

## G2427.8 Venting System Termination Location

### Change Type: Modification

- Sidewall vent terminal location with respect to adjoining buildings is limited.
- A 10-foot separation is required when a vent discharges in the direction of an opening in an adjacent building.



2015 IRC Significant Changes

162

## G2447.2 Prohibited Location of Commercial Cooking Appliances


### Change Type: Modification

- Cooking appliances that are listed as both commercial and domestic appliances may be installed in residential construction.




2015 IRC Significant Changes

164




## Code Changes

Of the changes in the mechanical and fuel gas sections, which will have the most impact on your job?



2015 IRC Significant Changes

165



## Chapter 25

# Plumbing Administration

167




## Part 7

# Plumbing

166

## P2502.1, P2503.4 Inspection and Tests for Building Sewers

- **Change Type:** Clarification
  - New text clarifies the method for examining existing building sewers and building drains when the entire sanitary drainage system is replaced. Internal examination is required to verify the size, slope, and condition of the existing piping. A new provision prescribes a pressure test for a forced sewer at a test pressure of 5 psi (34.5 kPa) greater than the pump rating.



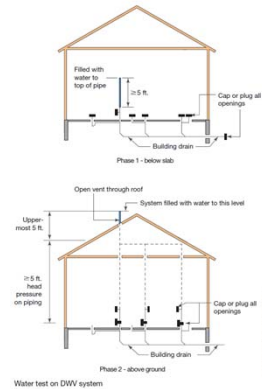
2015 IRC Significant Changes

168

## P2503.5 Drain, Waste, and Vent Systems Testing

### Change Type: Modification

- The head pressure for a water test on drain, waste, and vent (DWV) systems has been reduced from 10 feet to 5 feet.



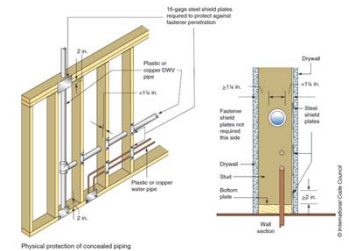
2015 IRC Significant Changes

169

## P2603.2.1 Protection Against Physical Damage

### Change Type: Modification

- For piping installed through bored holes or in notches, the minimum clearance distance from the concealed piping to the edge of the framing member has been reduced from 1½ inches to 1¼ inches. Protection is required for piping installed less than 1¼ inches from the edge of the framing member.



2015 IRC Significant Changes

171

## Chapter 26

# General Plumbing Requirements

170

## P2603.3 Protection Against Corrosion

### Change Type: Modification

- The minimum thickness of sheathing material for protection of piping against corrosion has been reduced from 0.025 inches to 0.008 inches (8 mil). The corrosion protection requirement applies to metallic piping other than cast iron, ductile iron, and galvanized steel that is in direct contact with concrete, masonry or steel framing. Previously, protection was only required for materials passing through walls and floors of these materials. All metallic piping requires corrosion protection when located in corrosive soils.



2015 IRC Significant Changes

172

## Table P2605.1 Piping Support

### Change Type: Modification

- Support spacing requirements for PEX and PE-RT tubing 1¼ inches and greater in diameter have been added to the table. Footnote b of Table P2605.1 clarifies the mid-story guide requirements for some types of vertical pipe 2 inches and smaller in diameter.

Piping Material	Maximum Horizontal Spacing (feet)	Maximum Vertical Spacing (feet)
Brass Pipe	40	40
Cross-linked polyethylene (PEX) pipe, 1 inch and smaller	2.67 (32 inches)	10 <sup>a</sup>
Cross-linked polyethylene (PEX) pipe, 1½ inch and larger	4	10 <sup>a</sup>
Polyethylene of Raised Temperature (PE-RT) pipe, 1 inch and smaller	2.67 (32 inches)	10 <sup>a</sup>
Polyethylene of Raised Temperature (PE-RT) pipe, 1½ inch and larger	4	10 <sup>a</sup>

(Portions of table not shown remain unchanged.)

a. (No change to test.)

b. Mid-story guide for sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe.

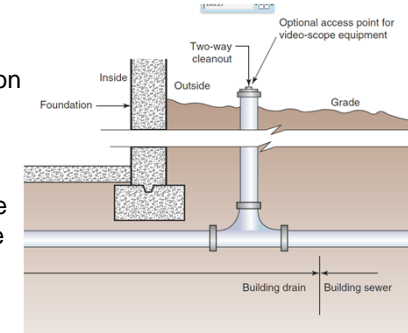
2015 IRC Significant Changes

173

## P2502.1, P2503.4 Inspection and Tests for Building Sewers

### CHANGE TYPE: Clarification

- Internal examination is required to verify the size, slope, and condition of the existing piping.
- A pressure test is required for a forced sewer at a test pressure of 5 psi greater than the pump rating.



2015 IRC Significant Changes

175

## Chapter 27

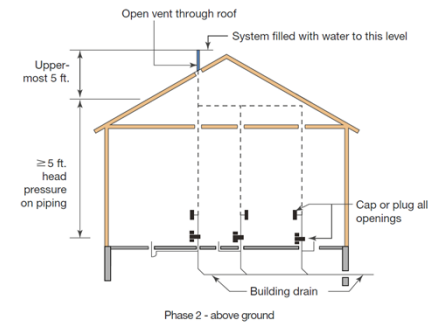
## Plumbing Fixtures

174

## P2503.5 Drain, Waste, and Vent Systems Testing

### CHANGE TYPE: Modification

- Head pressure for a water test on drain, waste, and vent (DWV) systems has been reduced from 10 feet to 5 feet.



2015 IRC Significant Changes

176

## P2702.1, P2706.1 Waste Receptors

### Change Type: Modification

- Waste receptors are now permitted in bathrooms and closets.

**WASTE RECEPTOR.** A floor sink, standpipe, hub drain or a floor drain that receives the discharge of one or more indirect waste pipes.



2015 IRC Significant Changes

177

## P2801 Water Heater Drain Valves and Pans

### Change Type: Modification

- Drain valves with a threaded outlet are required for water heaters.
- Aluminum and plastic water heater pans are acceptable.
- A pan drain is not required when a water heater is replaced and there is no existing drain.

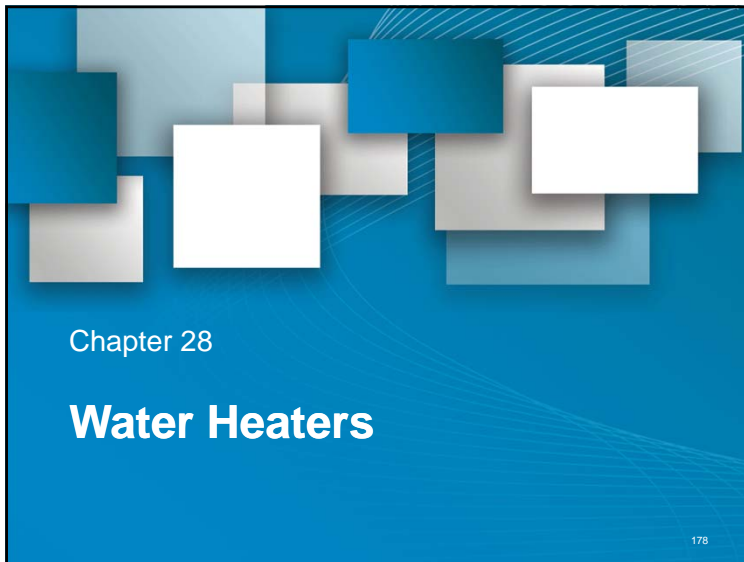


2015 IRC Significant Changes

179

## Chapter 28

# Water Heaters



178

## P2804.6.1 Water Heater Relief Valve Discharge Piping

### Change Type: Modification

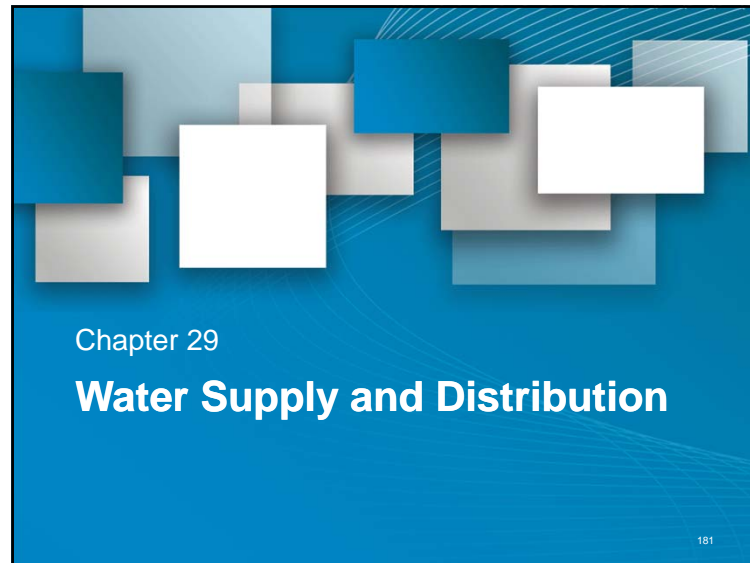
- The temperature and pressure (T&P) relief valve discharge pipe termination must have an air gap suitable to protect the potable water supply of the building.
- PEX and PE-RT tubing used for relief valve discharge piping must be one size larger than the T&P valve discharge outlet and the outlet end of the tubing must be fastened in place.



2015 IRC Significant Changes

180

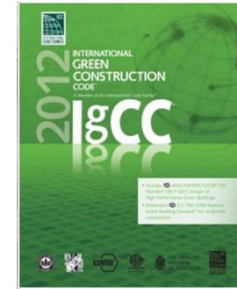




## P2910 through P2913 Nonpotable Water Systems

Change Type: Modification

- New Sections P2910 through P2913 are extracted from the International Green Construction Code (IgCC).
- Provide guidance on the collection, storage, and distribution of various types of nonpotable water for residential buildings.



2015 IRC Significant Changes

183

## P2901 Nonpotable Water Systems

Change Type: Modification

- Nonpotable water outlets that utilize nonpotable water must be identified with a warning and a symbol that nonpotable water is being used.
- The color purple is established for identifying distribution piping conveying nonpotable water.



2015 IRC Significant Changes

182

## P2906.2 Lead Content of Drinking Water Pipe and Fittings

Change Type: Modification

- The limitation for lead content in pipe, pipe fittings, joints, valves, faucets, and fixture fittings that convey water used for drinking and cooking has become more stringent.
- Average lead content of 0.25 percent lead



2015 IRC Significant Changes

184

## Chapter 30

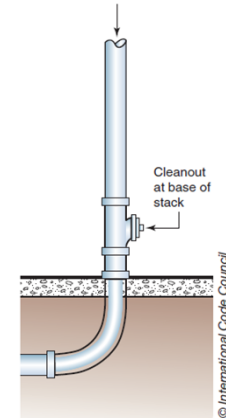
## Sanitary Drainage

185

## P3005.2 Cleanouts

## Change Type: Modification

- Brass cleanout plugs are only permitted for metallic piping.
- Where located at a finished wall, the cleanout must be within 1½ inches of the finished surface.
- A cleanout is no longer required at the base of each waste or soil stack.



Cleanout on a stack

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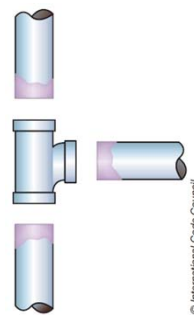
2015 IRC Significant Changes

187

## P3003.9 Solvent Cementing of PVC Joints

## Change Type: Modification

- For 4-inch pipe size and smaller it is not required to apply primer prior to solvent cementing for drain, waste, and vent PVC pipe and fittings for non-pressure applications.



Purple primer is no longer required for joints of non-pressure PVC DWV piping 4 inches or less in diameter.



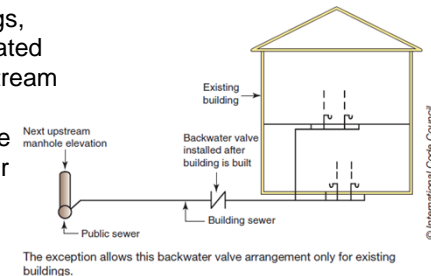
2015 IRC Significant Changes

186

## P3008.1 Backwater Valves

## Change Type: Modification

- For existing buildings, fixtures that are located above the next upstream manhole cover are allowed to discharge through a backwater valve.



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2015 IRC Significant Changes

188

## Chapter 31 Vents

189

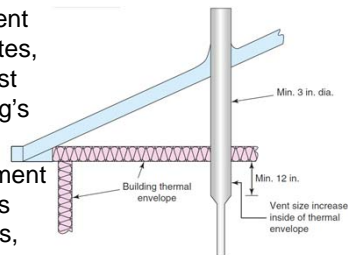
## Chapter 32 Traps

191

### P3103.1, P3103.2 Vent Terminals

#### Change Type: Modification

- Where a min. 3-in. vent terminal is required to prevent frost blockage in cold climates, the pipe must extend at least 12 inches inside the building's thermal envelope.
- The min. 7-ft height requirement for vent terminations applies only for roofs used for decks, patios and balconies.



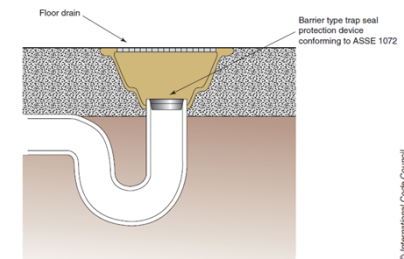
2015 IRC Significant Changes

190

### P3201.2 Trap Seal Protection Against Evaporation

#### Change Type: Modification

- Trap seal protection against evaporation may use trap seal primer valves supplied with nonpotable water and barrier-type trap seal protection devices.



A barrier-type trap seal protection device is one of four methods of protecting the floor drain trap seal from evaporation.



2015 IRC Significant Changes

192

**DISCUSSION**

## Code Changes

Of the changes covered in plumbing, which will have the most impact on your job?

2015 IRC Significant Changes 193

## Chapter 39

# Power and Lighting Distribution

195

## Part 8

# Electrical

194

## E3901.9 Receptacle Outlets for Garages

**Change Type: Modification**

- Garage receptacle outlets must be served by a separate branch circuit that does not supply outlets outside the garage.
- At least one receptacle outlet is required for each car space in a garage.

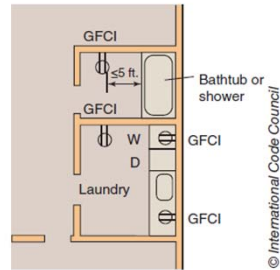
A minimum of two receptacle outlets are required for a two-stall garage.

2015 IRC Significant Changes 196

## E3902.8, E3902.9, E3902.10 Ground-Fault Circuit Interrupter Protection

### Change Type: Modification

- Laundry areas require ground-fault circuit interrupter (GFCI) protection.
- Receptacles within 6 feet of bathtubs and showers, and receptacles for dishwashers also require GFCI protection.



GFCI protection required for 125-volt, 15- and 20-amp receptacle outlets in laundry areas and near showers or bathtubs



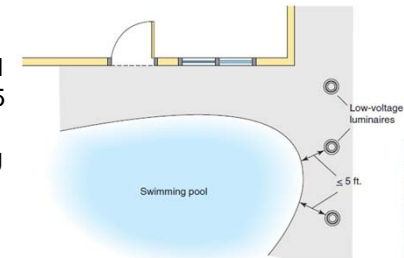
2015 IRC Significant Changes

197

## E4203.4.3 Location of Low-Voltage Luminaires Adjacent to Swimming Pools

### Change Type: Modification

- Listed low-voltage luminaires are permitted to be located less than 5 feet from the water's edge of spas, swimming pools, and hot tubs.



Listed low-voltage luminaires meeting all conditions are allowed within 5 feet of swimming pools.



2015 IRC Significant Changes

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## Chapter 42

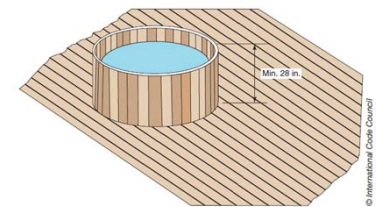
## Swimming Pools

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## E4204.2 Bonding of Outdoor Hot Tubs and Spas

### Change Type: Modification

- Perimeter equipotential bonding is not required when a spa or hot tub is:
  - Self-contained
  - Not suitable for indoor use
  - Above grade
  - Greater than 28 in. above perimeter surfaces
- Or when
  - Listed, located indoors and installed above the flooring



Equipotential bonding is not required for self-contained hot tubs that are installed above ground in accordance with the manufacturer's instructions and the code requirements.



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## Appendix S Strawbale Construction

### Change Type: Addition

- Provisions for strawbale construction have been added.
- Strawbale walls may be bearing walls or nonbearing infill around a structural frame.



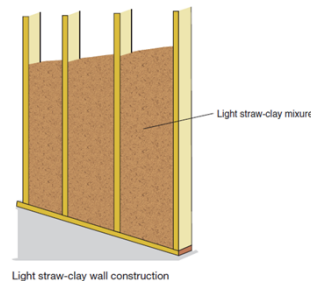
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## Appendix R Light Straw-Clay Construction

### Change Type: Addition

- Provisions for light straw-clay construction added.
- Light straw-clay walls are nonbearing infill around a structural frame.
- Errata in the first printing of the IRC



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## Code Changes

Of the changes covered thus far, which will have the most impact on your job?




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## Final Reflection

This slide will help the learner to reflect on the day and what they will take back to the job and apply.



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